STUDIO TABLETOP

BEVERAGE MACHINE

TECHNICAL MANUAL

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FOREWORD

1. The information contained in this service manual is applicable to the Studio Tabletop Beverage Machine. Four versions are available:

   - Instant (INST)
   - Single Fresh Brew Tea (SFBT)
   - Single Fresh Brew Coffee (SFBC)
   - Double Fresh Brew (DFB)

2. The machine described in this manual is the Studio Tabletop SFBT version, which includes features of all models. Due to customer requirements, however, some features may vary from the one described, e.g. extras fitted, variations in programming etc.

3. Maintenance of the Beverage Machine must only be undertaken by personnel who are authorised and suitably qualified.

4. The Manufacturer reserves the right to make changes without notice to the design of the beverage machine, which may affect the information contained in this manual.

5. Outline Specification

   (a) Dimensions

Height	800mm
Depth	560 mm
Width	540 mm

   (b) Weight — 65 Kg (approximately)

   (c) Operating Environment

Temperature	1°C min - 40° max
Humidity	TBA max

   (d) Cup Capability

Quantity	220 cups
Sizes	70 and 73 mm diameter

SAFETY WARNINGS

1. Maintenance of the beverage machine is only to be undertaken by trained personnel who are fully aware of the dangers involved and who have taken adequate precautions, e.g. ensuring that, whenever possible, the beverage machine is isolated from the mains electrical supply.
2. Lethal voltages are exposed when any panel inside the cabinet is removed and the mains electrical supply is available (i.e. on/off switch is overridden). The mains electrical supply is maintained to the Carbonator even when the door is open.
3. The beverage machine must be earthed.
4. Keep clear of the Brewer Unit when it is indexing.
5. The beverage machine is a heavy item. Ensure that sufficient personnel are available for lifting and transporting the machine. Use proper lifting procedures and equipment.
6. The water in the heater tank, and the tank itself, are hot enough to scald or burn, even some time after the machine has been switched off. The water heater tank must be drained, filled with cold water and drained again before any attempt is made to handle it or any of its associated parts.
7. The Controller Board is fitted with a lithium battery. Abuse of this type of battery can lead to overheating, venting, explosion, release of potentially hazardous materials and spontaneous ignition.

   The lithium battery must not be charged or connected to any other source of power. The battery must not be short-circuited or forced to discharge its stored energy. The battery must not be subjected to physical damage or overheating. If the Controller Board is to be replaced, it must be handled with care, taking all practical anti-static precautions.
8. Care must be taken to protect the beverage machine from frost. Do not attempt to operate the machine if it becomes frozen. Contact the nearest service agent immediately. Do not restore the machine to operational use until it has been checked and approved for use by the service agent.
9. Young children, the aged and the infirm should not be allowed to operate the beverage machine unsupervised, in order to protect them from the risk of being scalded by hot beverages.
10. Replacement of the Type Y mains cable requires special tools. Should the cable become damaged, a trained person from an approved service agent must only carry out replacement.

Section 1
Technical Information

INTRODUCTION

1. The Studio Tabletop consists of four types of coin-operated, microprocessor controlled, beverage machine that dispense a range of hot drinks in response to keypad selections. The models differ in the method by which the tea and coffee based selections are made. The instant version uses only soluble ingredients whereas the SFB Tea, SFB Coffee and Double Fresh Brew versions use appropriate brewers in conjunction with soluble ingredients to prepare beverages from fresh leaf tea and ground coffee ingredients.

   - Instant (INST) - Instant Tea and Coffee
   - Single Fresh Brew Tea (SFBT) - Fresh Brew Tea and Instant Coffee
   - Single Fresh Brew Coffee (SFBC) - Fresh Brew Coffee and Instant Tea
   - Double Fresh Brew (DFB) - Fresh Brew Tea and Coffee

2. This manual uses the SFBT version as the basis for examples. Where significant differences between versions exist this will be highlighted in main body of the document. Due to customer requirements, however, some features may vary from those described, e.g. extras fitted, variations in programming etc.

3. Cups from a cup drop mechanism are dispensed to contain the drinks. When full the cup carousel can accommodate approximately 220 cups. Two versions of cup drop mechanism are available. One to dispense 73mm diameter cups, (Part Number 89332), and one to dispense 70mm cups (Part Number 89333). A cup catcher appropriate to the size cup drop mechaniusm and size of cups must be fitted. A key-operated jug facility is also provided.

4. Selection is made on a 16 button keypad and a LCD display panel shows status and drink selection information.

5. The status of the machine may be monitored, and the configuration altered, by accessing a menu of program options using both internal and external keypads. Each option comprises a number of sub-options, the settings of which can be altered.

6. A feature of the Studio Tabletop beverage machines is the mobile dispense head which moves the dispense nozzles to a parked position away from the cup port after each drink is vended, preventing the possibility of any residue from the previous drink dripping into the next one.

7. The Studio Tabletop machines require a single-phase 240V electrical mains supply from a domestic 13A outlet, and a cold water supply from the domestic cold water main. These services enter the machine at the rear of the cabinet.

GENERAL DESCRIPTION

8. The operational components which form a Studio Tabletop beverage machine are housed in a metal enclosure, access to which is gained by a swivel door secured by a key operated locking mechanism. Turning the key in the lock allows the door to be opened. With the door open the mains isolation switch for ON/OFF operation of the machine is visible in the top left corner of the machine.

9. Equipment inside the cabinet is arranged in two sections: front and rear. On opening the door, the Operator is immediately faced with those items of equipment to which he or she requires access, e.g. Ingredient Canisters, Cup Turret, Coin Mechanism, Waste Tray, etc. The remaining items of equipment, e.g. Water Heater, Valves, Electrical and Electronic components, etc, to which specifically the Engineer requires access (and from which the Operator must be shielded) are located behind the Ingredient Canisters and Whipper Motor and Dispense Head Assembly panel, at the rear of the cabinet.

CABINET FRONT

10. The Cup Drop Assembly, Coin Mechanism, Controller Board and Cup Station are fitted to the rear of the cabinets door. The Customer's keypad is fitted to the front panel and is connected to the Controller board via a cable assembly.

11. Ingredient canisters are located on a shelf approximately half way up the cabinet. At the front of the shelf is a duct assembly to which an extractor fan is connected. The fan pulls air from the extract duct, which in turn removes steam/moist air from the mixing systems, which are located on a vertical panel below the canister shelf. The moving dispense head protrudes through and is fastened to this vertical panel and in the case of the fresh brew versions this vertical panel also provides the mounting for the fresh brew units.

12. Located beneath the cup station is a drip tray. The primary purpose of the tray is to collect any spillage that occurs whilst users are removing their cups and any drips that fall from the dispense nozzles after the cup is removed. In addition to this any overflow from the boiler resulting from a fault condition is directed into the waste tray. A pair of liquid level probes mounted on the door protrudes into the drip tray when the door is closed. When the waste liquid in the tray reaches the level sensor probe, the water supply inlet is shut off and the machine is rendered inoperable.

13. Because of its restricted size users should be discouraged from using the tray to dispose of unwanted beverages as this will result in the machine being put out of service. On the fresh brew versions a plastic waste bucket for the tea leaf and coffee grouts residue is located underneath the Brewer Unit(s). Any overflow from this receptacle is directed into the smaller waste tray located beneath the Cup Station. On these versions the overflow from the boiler is also routed via this receptacle.

CABINET REAR

14. Access to the components and equipment in the rear section of the cabinet is obtained by removing the ingredient canisters and the back panel.

15. Cold water mains supply enters the cabinet through an aperture in the rear panel and connects to a twin chamber inlet valve for the hot water supply.

16. A length of tubing takes the water supply from the inlet valve into the water heater tank, located at the top of the cabinet. Hot water in the correct quantity is then directed from the tank to the appropriate mixing bowl via a solenoid operated dispense valve. A dispense valve is associated with each ingredient mixing system. Any overflow from the tank is directed into the drip tray via an overflow tube. Another length of tubing facilitates draining of the heater tank. Mounted on top of the tank is a high temperature cut-out which, when operated, cuts off the electrical supply to the heater in the tank. The cut-out must then be reset to restore the supply. **To do so safely the electrical supply must be disconnected from the machine**.

17. A pair of level probes are fitted to the bottom of the cabinet door. When the door is closed these devices act as contact probes allowing the units control system to monitor the liquid level in the waste container.

18. Two printed circuit boards are fitted to the top right hand side of the cabinet rear panel; the DC Remote Input/Output Board (DC RIO) and the Power Supply Unit (PSU). The DC RIO Board provides the high current drives to operate the output devices (valves, motors etc) in response to signals from the Controller Board.

19. A solid-state relay, located beneath the printed circuit boards, pulses current to the heater in response to signals from the DC RIO Board. The DC RIO board receives signal from the Controller board via an I squared C link. The temperature of the water in the boiler is measured by the Controller Board using an NTC thermistor mounted at the end of a stainless steel probe immersed in the hotwater tank.

WATER SYSTEM

20. The cold water mains supply enters the machine via a double-solenoid operated inlet valve at the rear of the cabinet. This valve controls the flow of water to the units hotwater tank.

21. Water is supplied via the Hot Inlet valve to the heater tank where it is heated to the required temperature by a heating element in the tank. A combined temperature and level probe assembly in the tank, which causes the supply to the heater to be removed when the preset temperature is reached, control water temperature. The probe assembly also acts as a level sensor, causing the Hot Inlet valve to open when the water in the tank falls below a preset level. The probe (i.e. the input device) is monitored by the Controller Board, and the water heater and Hot Inlet valve (i.e. the output devices) are controlled by the DC RIO Board in response to signals from the Controller Board.

22. Depending on the type of hot drink selected, hot water from the heater tank is fed via solenoid operated dispense valves to the appropriate mixing bowl or Brewer Unit. Ingredients and water are mixed in exact quantities in the mixing bowl and then directed to the dispense head. Similarly, water and ingredient are brewed in exact amounts in the Brewer Unit and then directed to the dispense head.

23. A resettable cut-out sensor, mounted on the boiler lid, cuts off the electrical supply to the tank heater circuit if the water in the tank starts to boil. Additionally, if the fluid level in the overflow waste bucket rises above a preset level, it is detected by a level probe and reported to the Controller Board, which responds by closing the inlet valve via the DC RIO Board and rendering the machine inoperable.

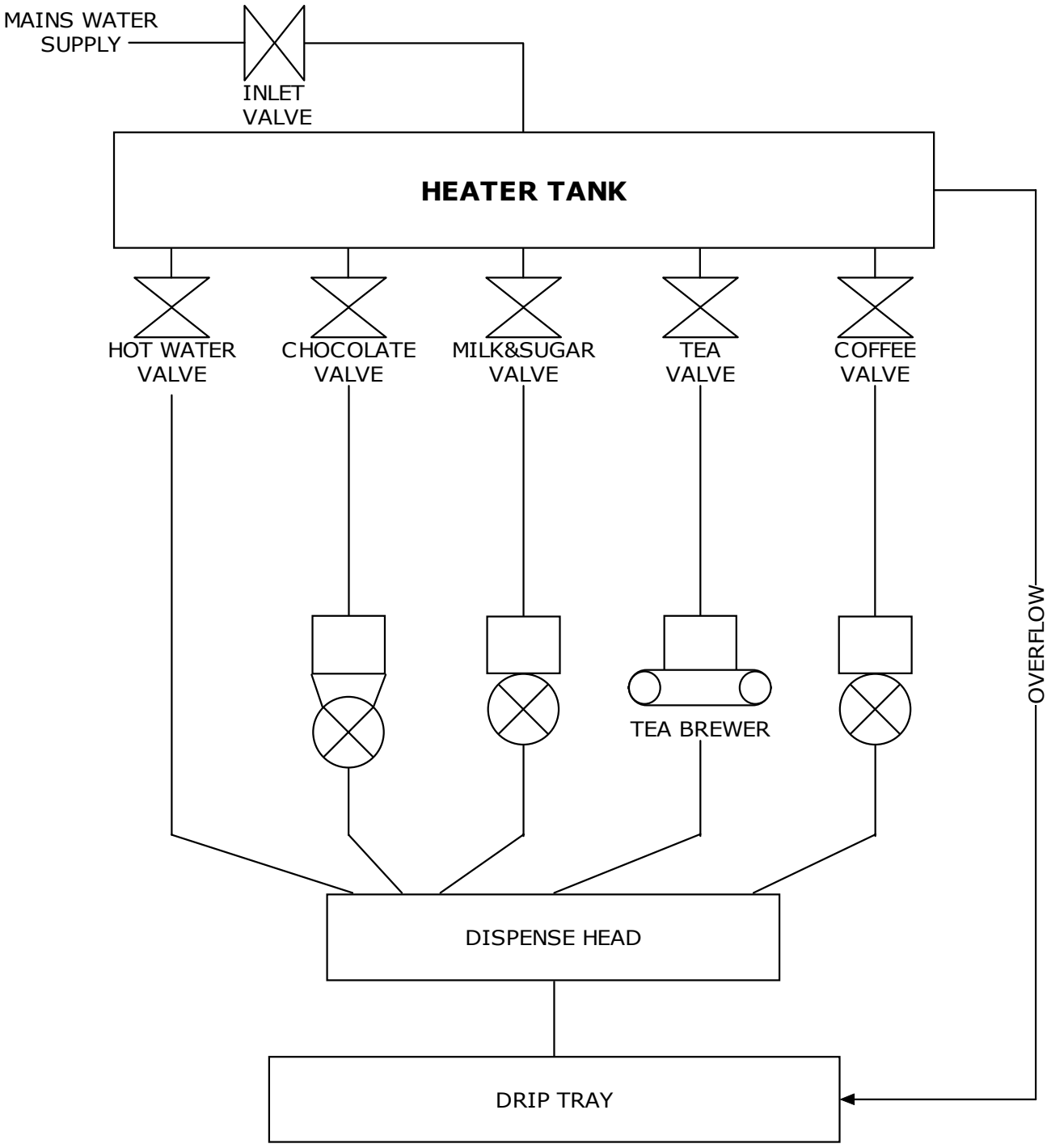


Fig. 1. 1. WATER SYSTEM FUNCTIONAL DIAGRAM – SINGLE FRESH BREW TEA

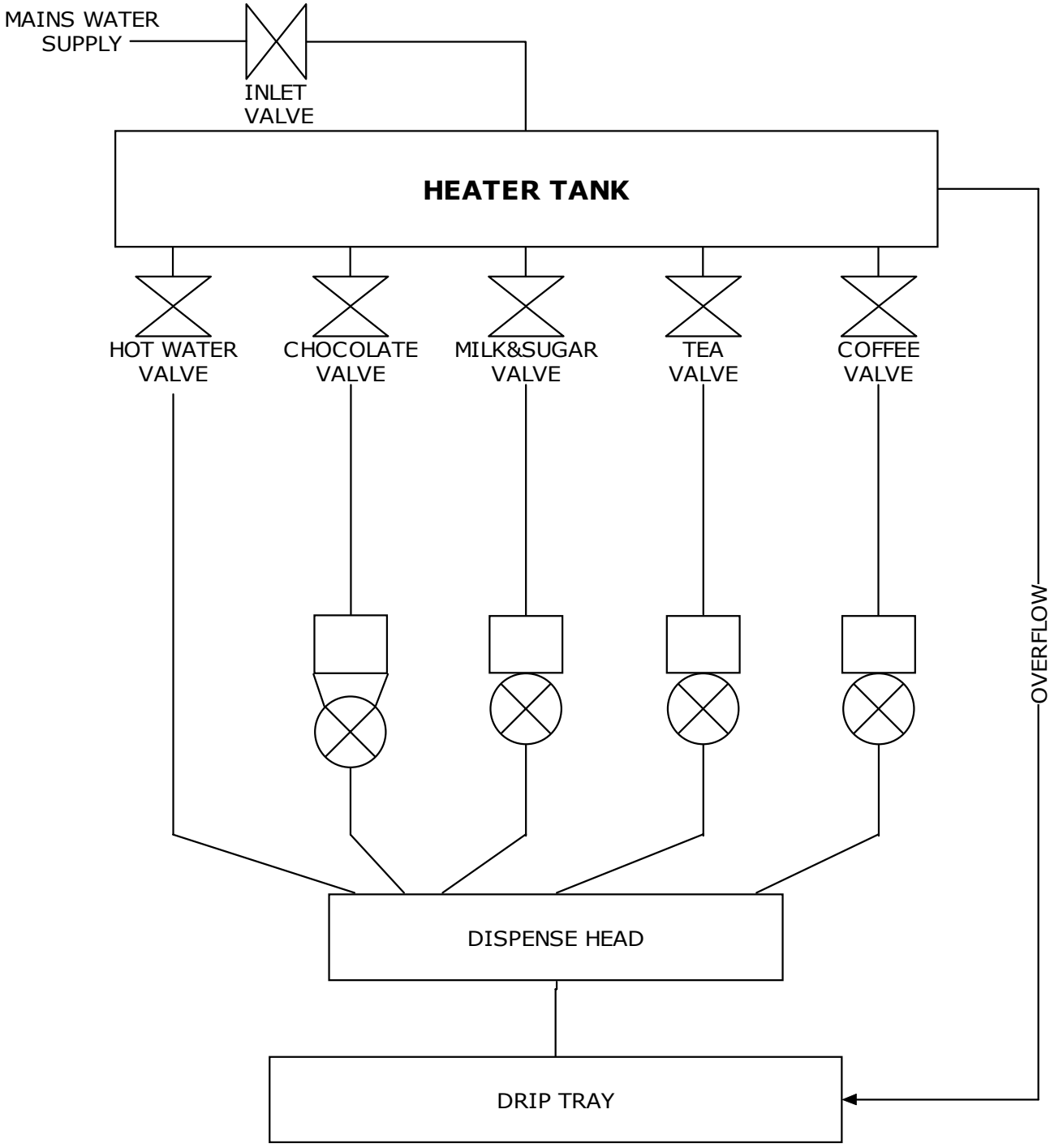


Fig. 1. 2. WATER SYSTEM FUNCTIONAL DIAGRAM – INSTANT

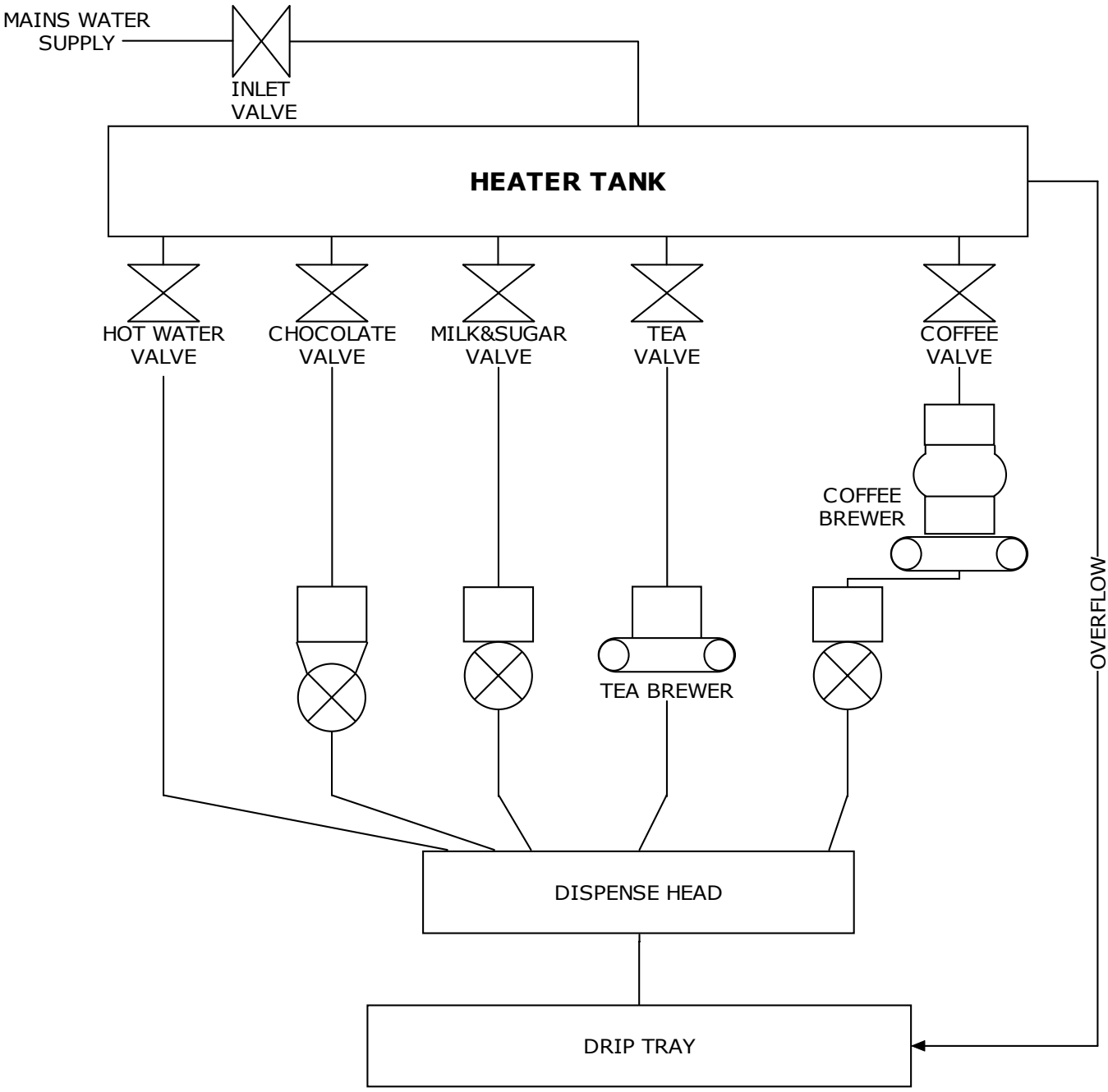


Fig. 1. 3. WATER SYSTEM FUNCTIONAL DIAGRAM – DOUBLE FRESH BREW

ELECTRICAL AND ELECTRONIC SYSTEM

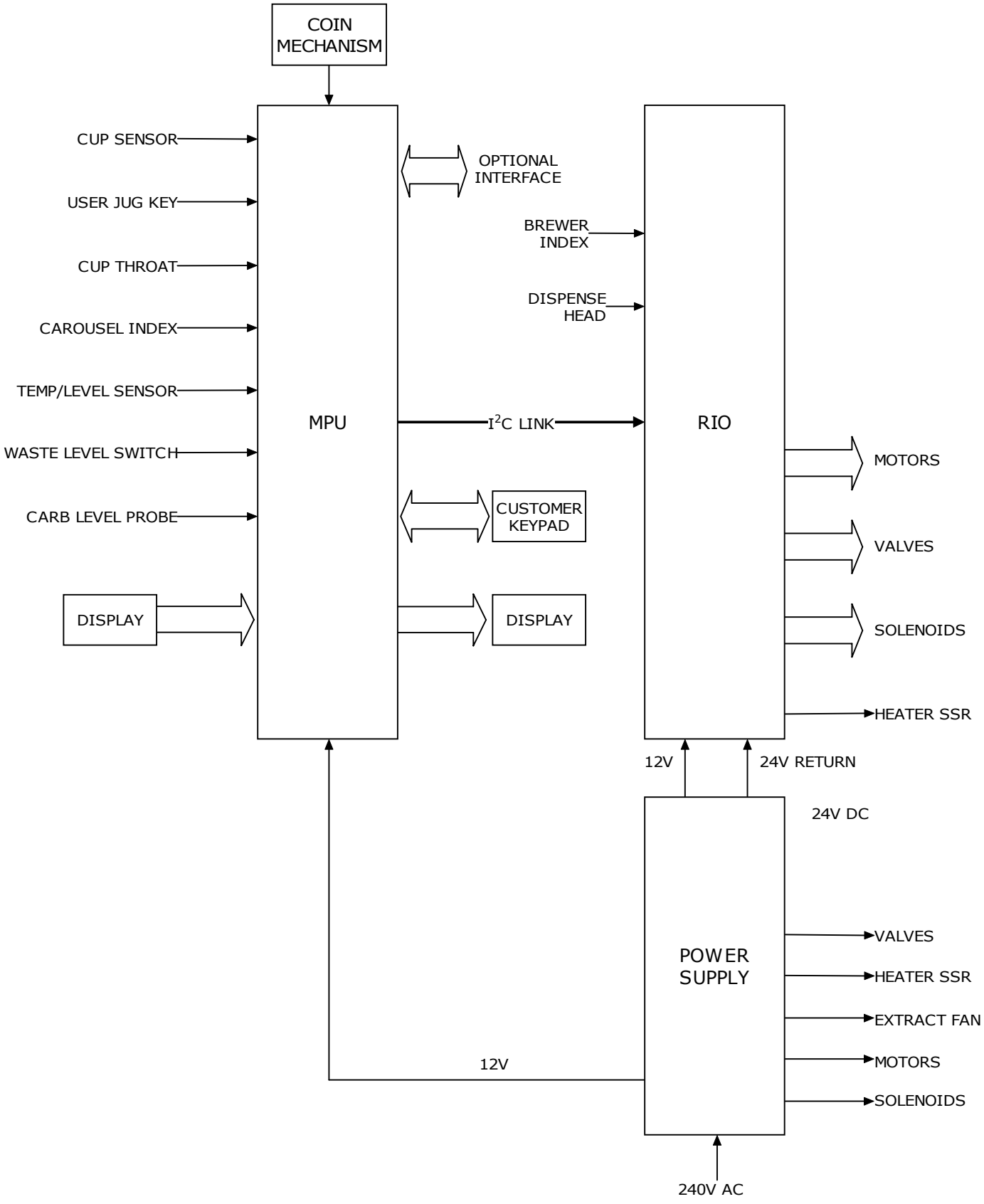
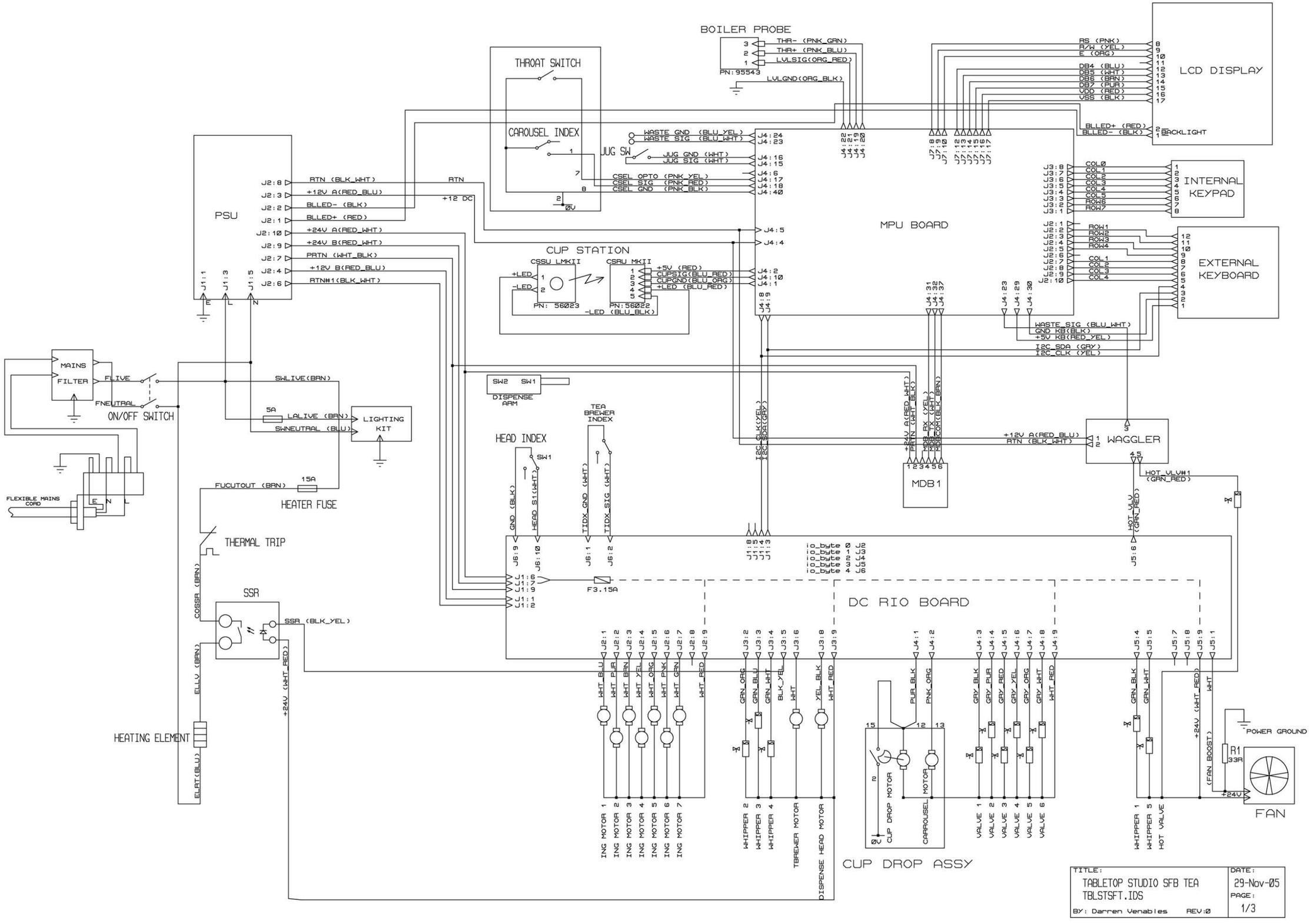


Fig. 1. 4. ELECTRICAL & ELECTRONIC SYSTEM – FUNCTIONAL DIAGRAM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THR- (PNK_GRN)
THR+ (PNK_BLU)
LVLSIG(ORG_RED)
PN:95543
LVLGND(ORG_BLK)
THROAT SWITCH
CAROUSEL INDEX
JUG SW
WASTE GND (BLU_YEL)
WASTE SIG (BLU_WHT)
JUG GND (WHT)
JUG SIG (WHT)
CSEL OPTO (PNK_YEL)
CSEL SIG (PNK_RED)
CSEL GND (PNK_BLK)
ØV
LCD DISPLAY
RS (PNK)
R/W (YEL)
E (ORG)
DB4 (BLU)
DB5 (WHT)
DB6 (BRN)
DB7 (PUR)
VDD (RED)
VSS (BLK)
BLLED+ (RED)
BLLED- (BLK)
BACKLIGHT
INTERNAL KEYPAD
COL0
COL1
COL2
COL3
COL4
COL5
ROW6
ROW7
EXTERNAL KEYBOARD
ROW1
ROW2
ROW3
ROW4
COL1
COL2
COL3
COL4
PSU
RTN (BLK_WHT)
+12V A(RED_BLU)
BLLED- (BLK)
BLLED+ (RED)
+24V A(RED_WHT)
+24V B(RED_WHT)
PRTN (WHT_BLK)
+12V B(RED_BLU)
RTNH1(BLK_WHT)
RTN
+12 DC
MPU BOARD
CUP STATION
CSSU LMKII
CSAU MKII
+LED
-LED
PN: 56023
PN:56022
-LED (BLU_BLK)
+5V (RED)
CUPSIG(BLU_RED)
CUPGND(BLU_ORG)
+LED (BLU_RED)
WASTE SIG (BLU_WHT)
GND KB(BLK)
+5V KB(RED_YEL)
I2C SDA (GRY)
I2C CLK (YEL)
MAINS FILTER
FLIVE
FNEUTRAL
ON/OFF SWITCH
SWLIVE(BRN)
5A
LALIVE (BRN)
SWNEUTRAL (BLU)
LIGHTING KIT
FLEXIBLE MAINS CORD
FUCUTOUT (BRN)
15A
HEATER FUSE
THERMAL TRIP
SSR
COSSR (BRN)
SSR (BLK_YEL)
ELLV (BRN)
+24V (WHT_RED)
HEATING ELEMENT
ELAT(BLU)
SW2 SW1
DISPENSE ARM
HEAD INDEX
SW1
TEA BREWER INDEX
GND (BLK)
HEAD S1(WHT)
TIDX GND (WHT)
TIDX SIG (WHT)
I2C CLK(YEL)
I2C SDA(GRY)
+24V A(RED_WHT)
PRTN (WHT_BLK)
MDB_RX (YEL)
MDB_TX (WHT)
MDB_COM (BLK)
MDB_COM1(BLK_BRN)
MDB1
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RTN (BLK_WHT)
WAGGLER
HOT VLVH1 (GRN_RED)
HOT VLV (GRN_RED)
F3.15A
DC RIO BOARD
byte 0
byte 1
byte 2
byte 3
byte 4
WHT_BLU
WHT_PUR
WHT_BRN
WHT_YEL
WHT_ORG
WHT_PNK
WHT_GRN
WHT_RED
GRN_ORG
GRN_BLU
GRN_WHT
BLK_YEL
WHT
YEL_BLK
WHT_RED
PUR_BLK
PNK_ORG
GRY_BLK
GRY_PUR
GRY_RED
GRY_YEL
GRY_ORG
GRY_WHT
WHT_RED
GRN_BLK
GRN_WHT
+24V (WHT_RED)
WHT
(FAN BOOST)
POWER GROUND
R1 33R
+24V
FAN
ING MOTOR 1
ING MOTOR 2
ING MOTOR 3
ING MOTOR 4
ING MOTOR 5
ING MOTOR 6
ING MOTOR 7
WHIPPER 2
WHIPPER 3
WHIPPER 4
TBREWER MOTOR
DISPENSE HEAD MOTOR
CUP DROP MOTOR
CARROUSEL MOTOR
CUP DROP ASSY
VALVE 1
VALVE 2
VALVE 3
VALVE 4
VALVE 5
VALVE 6
WHIPPER 1
WHIPPER 5
HOT VALVE
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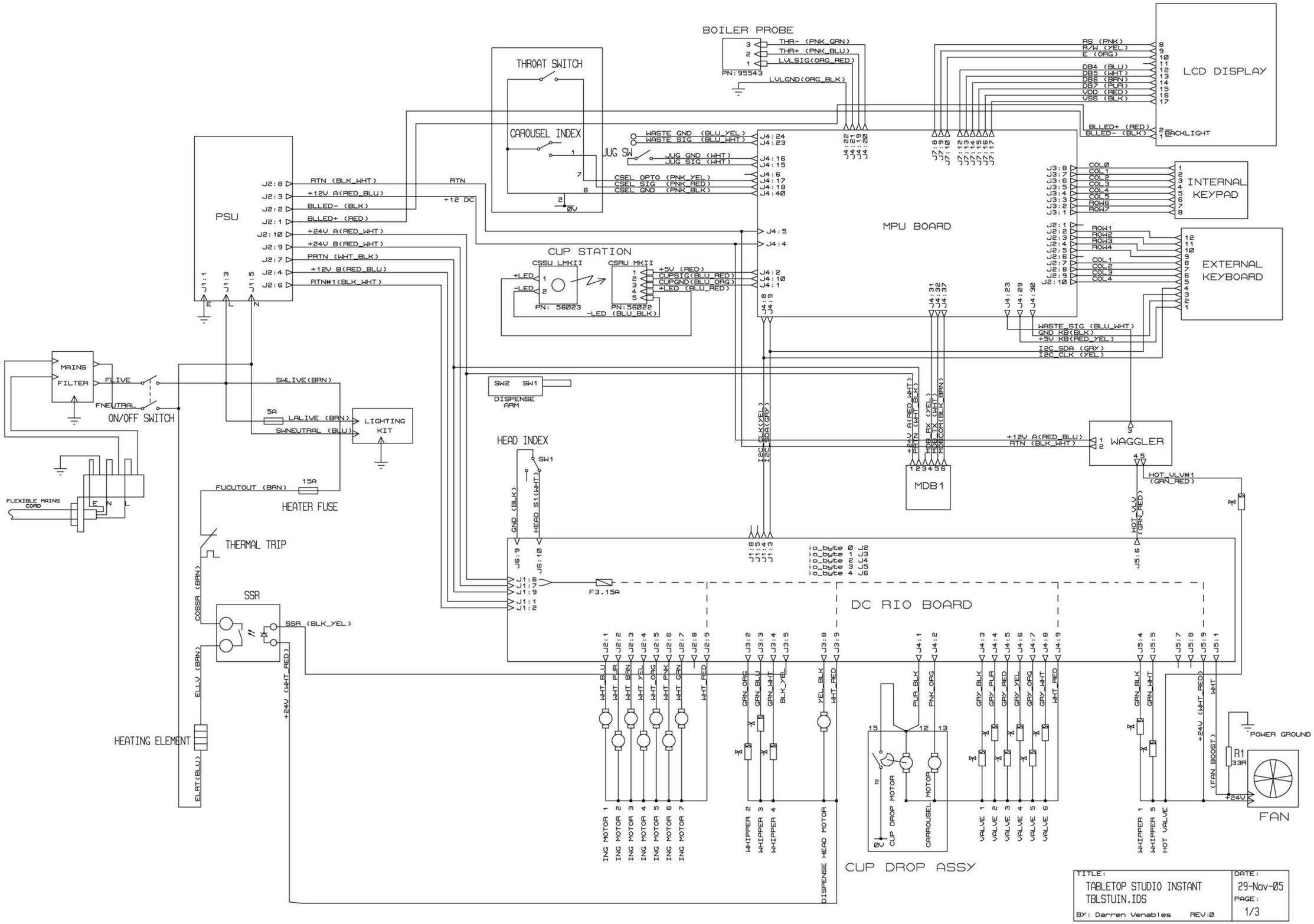

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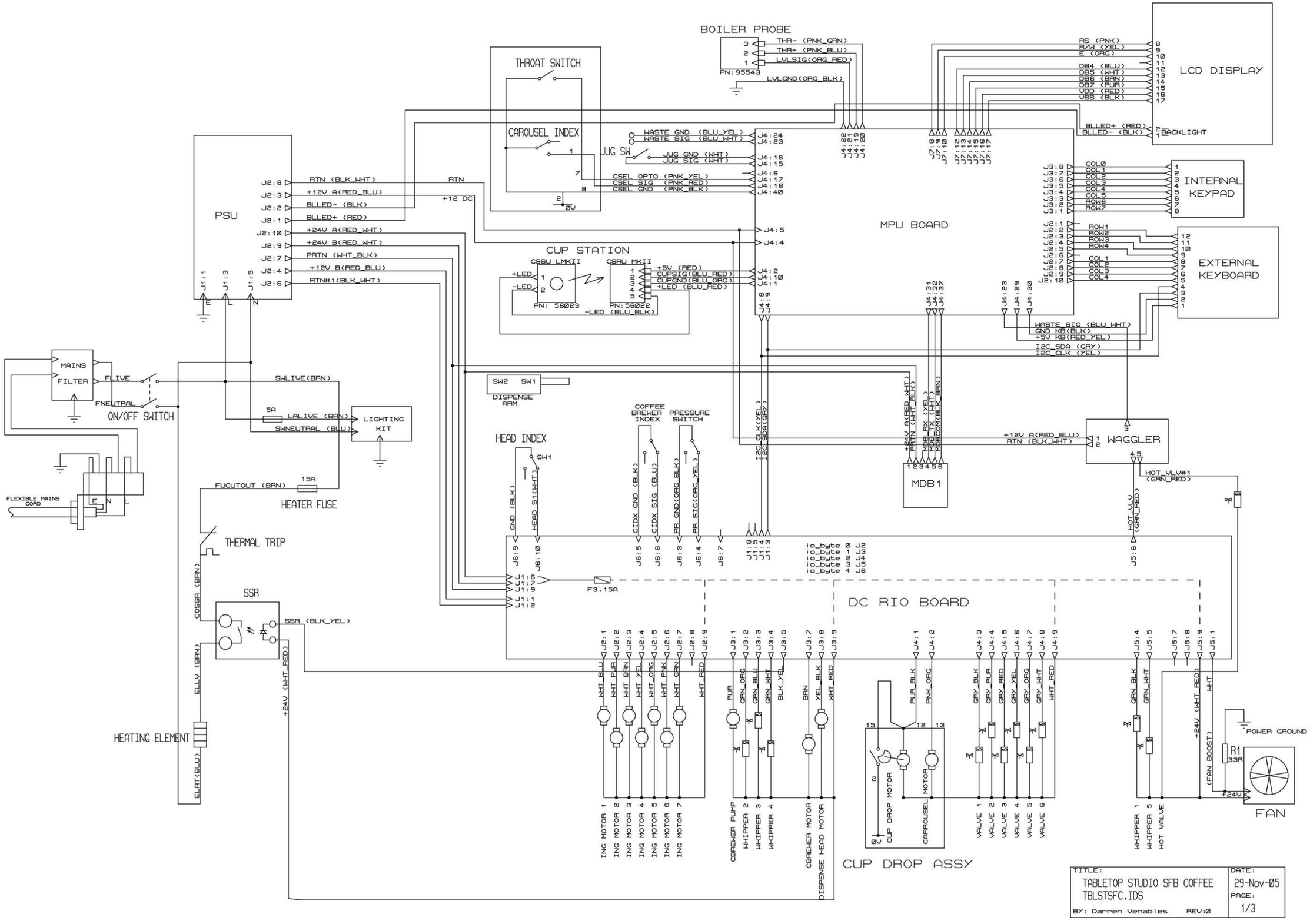
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THR+ (PNK_BLU)
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PN:95543
LVLGND(ORG_BLK)
THROAT SWITCH
CAROUSEL INDEX
JUG SW
WASTE GND (BLU_YEL)
WASTE SIG (BLU_WHT)
JUG GND (WHT)
JUG SIG (WHT)
CSEL OPTO (PNK_YEL)
CSEL SIG (PNK_RED)
CSEL GND (PNK_BLK)
0V
PSU
RTN (BLK_WHT)
+12V A(RED_BLU)
BLLED- (BLK)
BLLED+ (RED)
+24V A(RED_WHT)
+24V B(RED_WHT)
PRTN (WHT_BLK)
+12V B(RED_BLU)
RTNH1(BLK_WHT)
RTN
+12 DC
CUP STATION
CSSU LMKII
CSAU MKII
+LED
-LED
PN: 56023
PN:56022
-LED (BLU_BLK)
+5V (RED)
CUPSIG(BLU_RED)
CUPGND(BLU_ORG)
+LED (BLU_RED)
MPU BOARD
LCD DISPLAY
RS (PNK)
R/W (YEL)
E (ORG)
DB4 (BLU)
DB5 (WHT)
DB6 (BRN)
DB7 (PUR)
VDD (RED)
VSS (BLK)
BLLED+ (RED)
BLLED- (BLK)
BACKLIGHT
INTERNAL KEYPAD
EXTERNAL KEYBOARD
WASTE SIG (BLU_WHT)
GND KB(BLK)
+5V KB(RED_YEL)
I2C SDA (GRY)
I2C CLK (YEL)
MAINS FILTER
FLIVE
FNEUTRAL
ON/OFF SWITCH
SWLIVE(BRN)
5A
LALIVE (BRN)
SWNEUTRAL (BLU)
LIGHTING KIT
FLEXIBLE MAINS CORD
FUCUTOUT (BRN)
15A
HEATER FUSE
THERMAL TRIP
SSR
COSSR (BRN)
SSR (BLK_YEL)
ELLV (BRN)
+24V (WHT_RED)
HEATING ELEMENT
ELAT(BLU)
SW2 SW1
DISPENSE ARM
HEAD INDEX
SW1
GND (BLK)
HEAD S1(WHT)
COFFEE BREWER INDEX
PRESSURE SWITCH
CIDX GND (BLK)
CIDX SIG (BLU)
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PR SIG(ORG_YEL)
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I2C SDA(GRY)
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MDB_TX (WHT)
MDB_COM1 (BLK)
MDB_COM2 (BRN)
+12V A(RED_BLU)
RTN (BLK_WHT)
WAGGLER
HOT VLVH1 (GRN_RED)
HOT VLV (GRN_RED)
F3.15A
DC RIO BOARD
ING MOTOR 1
ING MOTOR 2
ING MOTOR 3
ING MOTOR 4
ING MOTOR 5
ING MOTOR 6
ING MOTOR 7
CBREWER PUMP
WHIPPER 2
WHIPPER 3
WHIPPER 4
CBREWER MOTOR
DISPENSE HEAD MOTOR
CUP DROP MOTOR
CARROUSEL MOTOR
CUP DROP ASSY
VALVE 1
VALVE 2
VALVE 3
VALVE 4
VALVE 5
VALVE 6
WHIPPER 1
WHIPPER 5
HOT VALVE
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(FAN BOOST)
POWER GROUND
R1 33R
+24V
FAN
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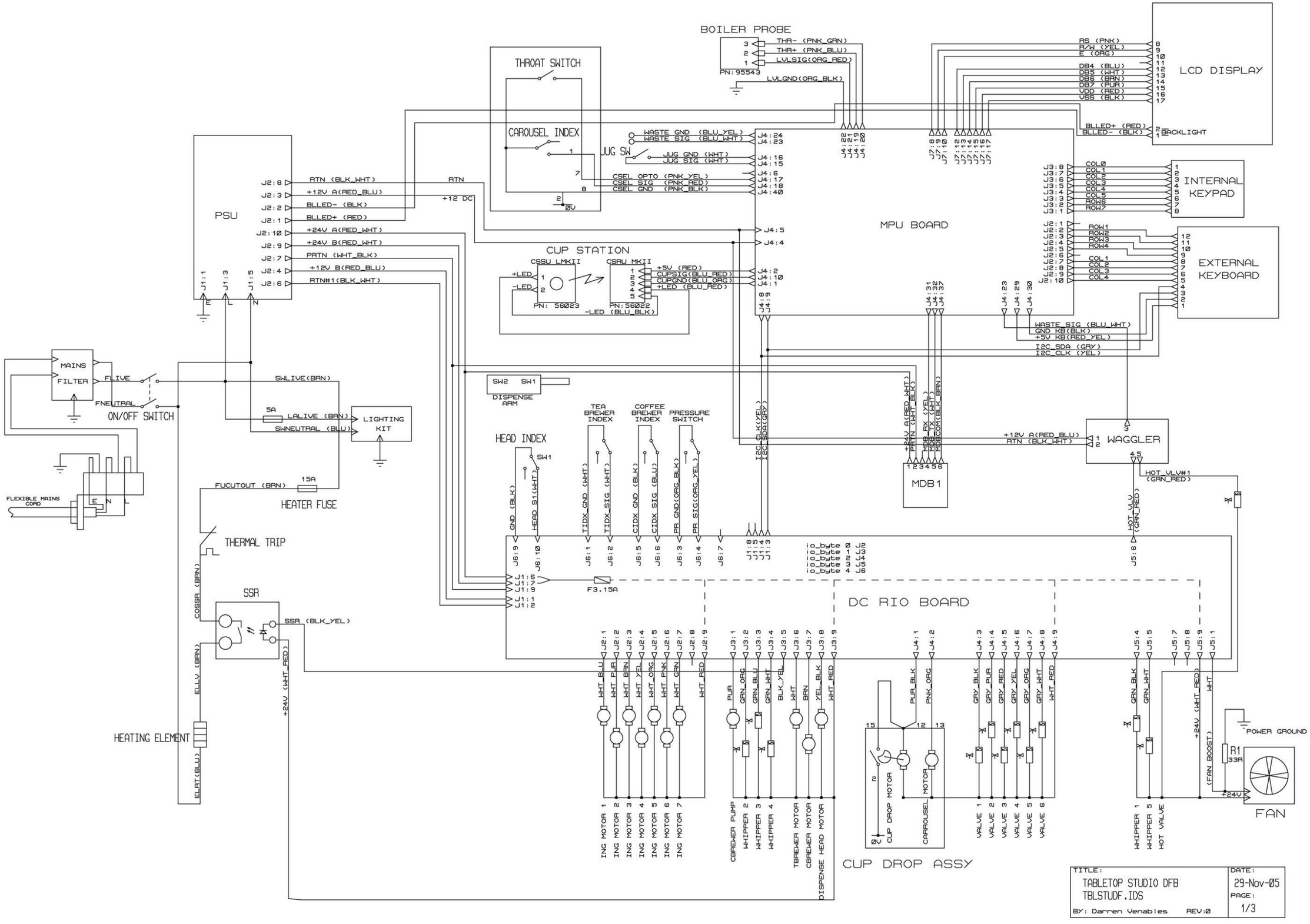
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LVLGND(ORG_BLK)
THROAT SWITCH
CAROUSEL INDEX
JUG SW
WASTE GND (BLU_YEL)
WASTE SIG (BLU_WHT)
JUG GND (WHT)
JUG SIG (WHT)
CSEL OPTO (PNK_YEL)
CSEL SIG (PNK_RED)
CSEL GND (PNK_BLK)
0V
PSU
RTN (BLK_WHT)
+12V A(RED_BLU)
BLLED- (BLK)
BLLED+ (RED)
+24V A(RED_WHT)
+24V B(RED_WHT)
PRTN (WHT_BLK)
+12V B(RED_BLU)
RTNH1(BLK_WHT)
RTN
+12 DC
CUP STATION
CSSU LMKII
CSAU MKII
+LED
-LED
PN: 56023
PN:56022
-LED (BLU_BLK)
+5V (RED)
CUPSIG(BLU_RED)
CUPGND(BLU_ORG)
+LED (BLU_RED)
MPU BOARD
LCD DISPLAY
RS (PNK)
R/W (YEL)
E (ORG)
DB4 (BLU)
DB5 (WHT)
DB6 (BRN)
DB7 (PUR)
VDD (RED)
VSS (BLK)
BLLED+ (RED)
BLLED- (BLK)
BACKLIGHT
INTERNAL KEYPAD
COL0
COL1
COL2
COL3
COL4
COL5
ROW6
ROW7
EXTERNAL KEYBOARD
ROW1
ROW2
ROW3
ROW4
COL1
COL2
COL3
COL4
WASTE SIG (BLU_WHT)
GND KB(BLK)
+5V KB(RED_YEL)
I2C SDA (GRY)
I2C CLK (YEL)
MAINS FILTER
FLIVE
FNEUTRAL
ON/OFF SWITCH
SWLIVE(BRN)
5A
LALIVE (BRN)
SWNEUTRAL (BLU)
LIGHTING KIT
FLEXIBLE MAINS CORD
FUCUTOUT (BRN)
15A
HEATER FUSE
THERMAL TRIP
SSR
COSSR (BRN)
SSR (BLK_YEL)
ELLV (BRN)
+24V (WHT_RED)
HEATING ELEMENT
ELAT(BLU)
SW2 SW1
DISPENSE ARM
HEAD INDEX
SW1
TEA BREWER INDEX
COFFEE BREWER INDEX
PRESSURE SWITCH
GND (BLK)
HEAD S1(WHT)
TIDX GND (WHT)
TIDX SIG (WHT)
CIDX GND (BLK)
CIDX SIG (BLU)
PR GND(ORG_BLK)
PR SIG(ORG_YEL)
F3.15A
MDB1
WAGGLER
HOT VLVH1 (GRN_RED)
HOT VLV (GRN_RED)
DC RIO BOARD
ING MOTOR 1
ING MOTOR 2
ING MOTOR 3
ING MOTOR 4
ING MOTOR 5
ING MOTOR 6
ING MOTOR 7
CBREWER PUMP
WHIPPER 2
WHIPPER 3
WHIPPER 4
TBREWER MOTOR
CBREWER MOTOR
DISPENSE HEAD MOTOR
CUP DROP MOTOR
CARROUSEL MOTOR
CUP DROP ASSY
VALVE 1
VALVE 2
VALVE 3
VALVE 4
VALVE 5
VALVE 6
WHIPPER 1
WHIPPER 5
HOT VALVE
(FAN BOOST)
POWER GROUND
R1 33R
+24V
FAN
TITLE:
TABLETOP STUDIO DFB
TBLSTUDF.IDS
BY: Darren Venables REV:0
DATE:
29-Nov-05
PAGE:
1/3

Section 2

Internal Keypad Functions

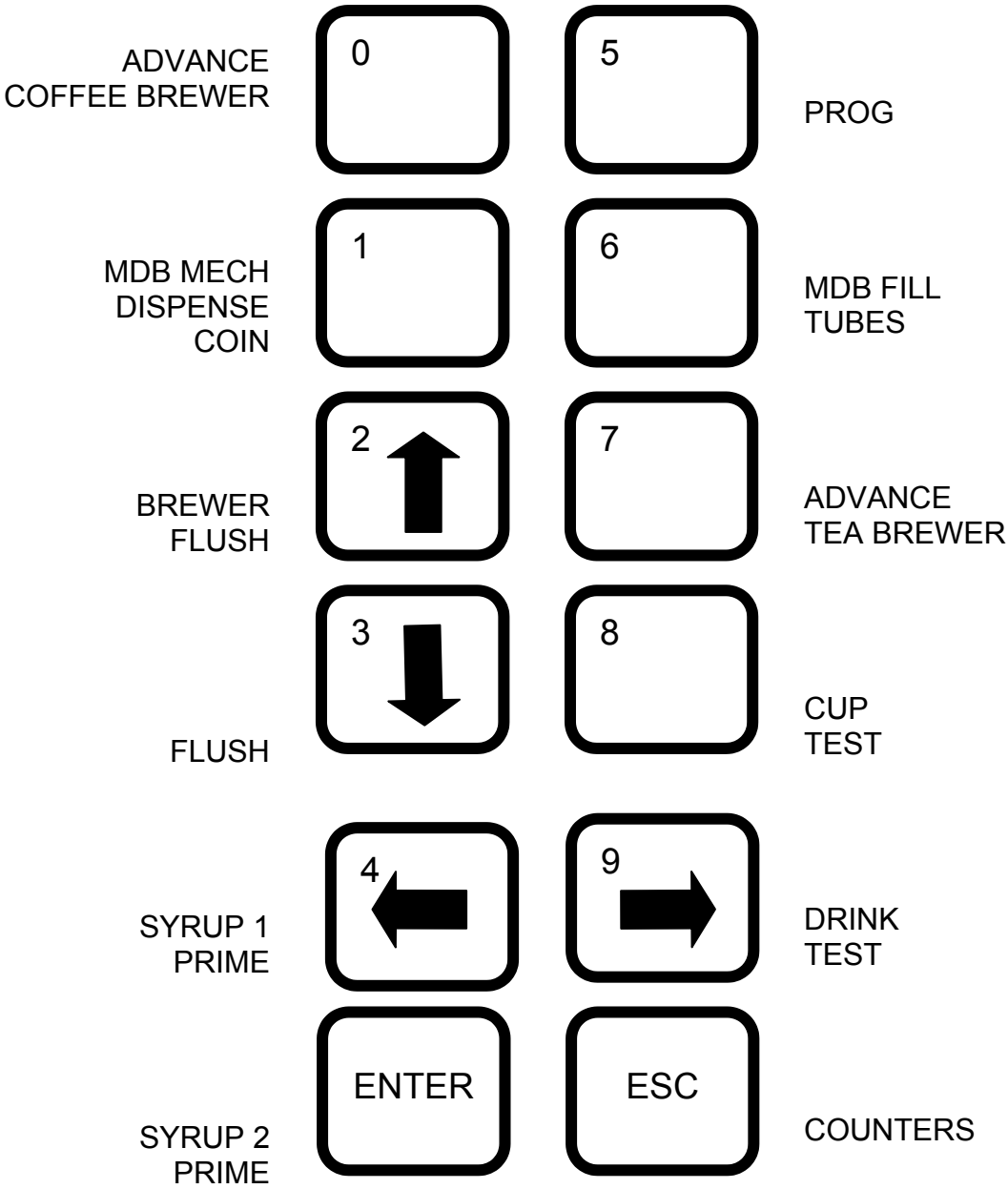


Fig. 2. 1. INTERNAL KEYPAD

INTERNAL KEYPAD

1. The internal keypad provides the facility to carry out a number of frequently required machine functions without the necessity to enter any of the user programs.

2. In most cases a single press of the key initiates the function associated with each button. If a further key press is necessary to end the action it will be the escape key.

3. The functions available from the internal keypad are as follows:

(a) Advance Coffee Brewer.

If a coffee brewer is fitted, a single depression of this key will cause the brewer unit to index to its next position in the cycle. The purpose of this function is to allow the brewer to be locked prior to a flush cycle so that cleaning agents can be added.

(b) MDB Mech Dispense Coin.

This key provides a method to empty the change tubes of an MDB coin mechanism, which does not itself possess the necessary buttons to do so. On pressing the key the external display will change to: -

(c)

EMPTY TUBE ←,→
C A B D ENT, ESC

A flashing cursor will appear on the 'C'. The function of the EXTERNAL keys will change as described in section **3** to allow actions to be performed on either the internal or external keypad. Pressing ENTER will cause a coin to be dispensed from tube 'C'. Pressing the → will cause the cursor to move right. With the cursor in this position pressing the ENTER key will cause a coin to be dispensed from the 'A' tube. Repeated use of the ←,→ & ENTER key enables all tubes to be emptied. Pressing the ESCAPE key ends the process.

(d) Brewer Flush

This key provides the means to initiate a flush cycle of the fresh brew units. A single press of this key will initiate a cleaning cycle for all brewers fitted to the machine simultaneously. In the case of the instant version this function is redundant.

(e) Syrup 1 Prime

This function is not applicable to these machine types.

(f) Syrup 2 Prime

This function is not applicable to these machine types.

(g) Prog

This key activates the code entry sequence required to access the protected levels of the machine control programs. See section 2b.

(h) MDB Fill Tubes

If an MDB coin mechanism is fitted this function allows the change tubes to be filled. On pressing the key the external display will change to:

INSERT FLOAT **£0.00**

As coins are inserted the value displayed will reflect the total value of the money inserted. Pressing ESCAPE will cause the machine to return to normal operation and zero the credit.

(i) Advance Tea Brewer.

If a Tea brewer is fitted, a single depression of this key will cause the brewer unit to index to its next position in the cycle. The purpose of this function is to allow the brewer to be locked prior to a flush cycle so that cleaning agents can be added.

(j) Cup Test

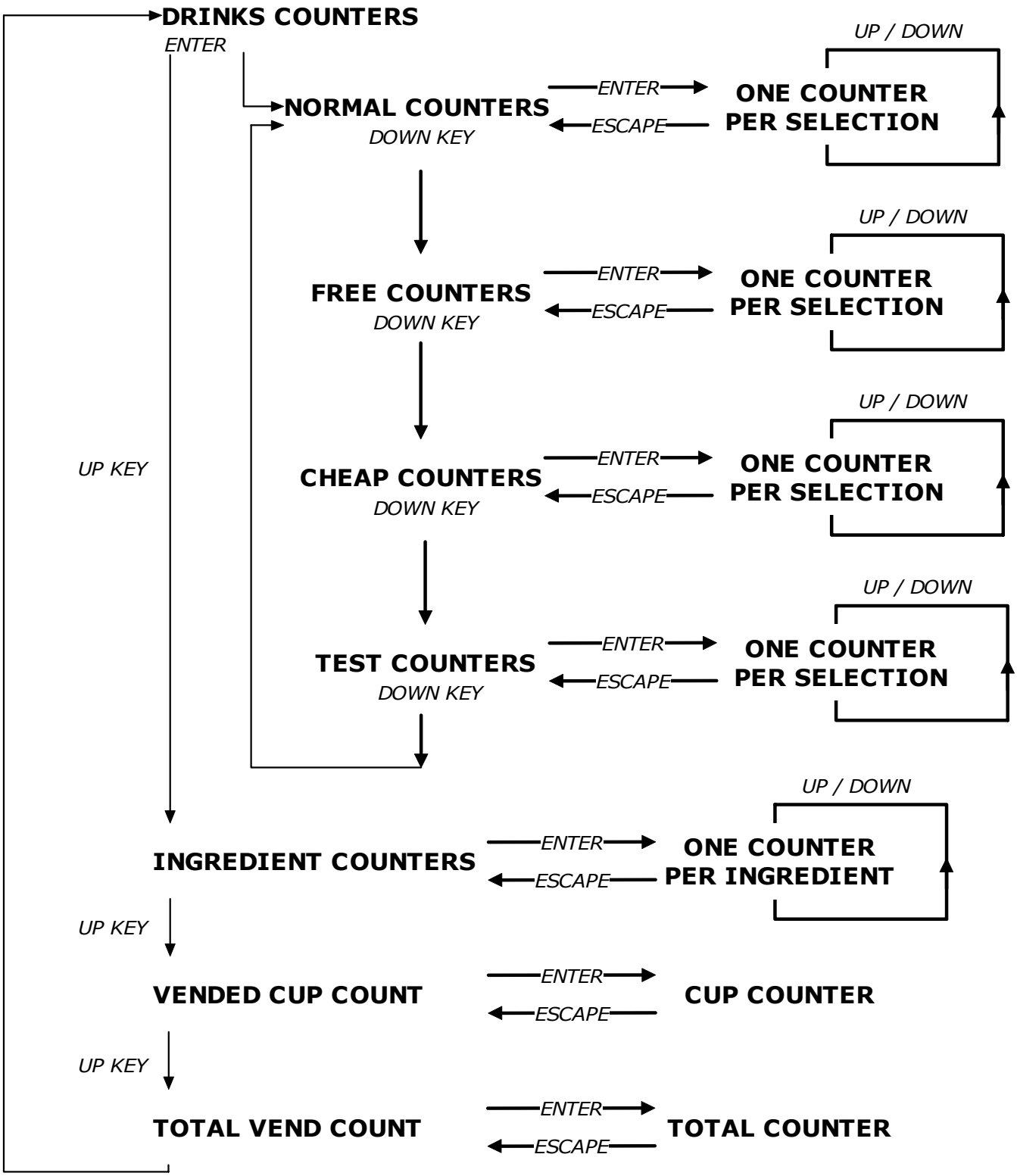
Causes a cup to be dispensed by the cup drop mechanism. The cup carousel will not index unless a selection is made or a cup test performed. This reduces the possibility of damage prevents damage to the carousel occurring because the cup stack has been pushed up from below causing a false out of cups signal to the control board.

(k) Drink Test

Allows the next selection to be taken as a free vend.

(l) Counters

Pressing the counters key places the machine in manual audit mode. Audit data is accessed via a series of menus. The chart below shows the menu headings in bold text whilst the key presses required to navigate the menu are shown in *italics*. Whilst in this mode the functions of the EXTERNAL keypad change to allow the menus to be accessed from the same side of the door as the display – see section 3 paragraph 5 for button functions in this mode.


DRINKS COUNTERS
ENTER
NORMAL COUNTERS
DOWN KEY
ENTER
ESCAPE
ONE COUNTER PER SELECTION
UP / DOWN
FREE COUNTERS
DOWN KEY
ENTER
ESCAPE
ONE COUNTER PER SELECTION
UP / DOWN
CHEAP COUNTERS
DOWN KEY
ENTER
ESCAPE
ONE COUNTER PER SELECTION
UP / DOWN
TEST COUNTERS
DOWN KEY
ENTER
ESCAPE
ONE COUNTER PER SELECTION
UP / DOWN
UP KEY
INGREDIENT COUNTERS
ENTER
ESCAPE
ONE COUNTER PER INGREDIENT
UP / DOWN
UP KEY
VENDED CUP COUNT
ENTER
ESCAPE
CUP COUNTER
UP KEY
TOTAL VEND COUNT
ENTER
ESCAPE
TOTAL COUNTER

Section 3
Programming

FOREWORD

1. The Studio Tabletop Beverage Machine has a comprehensive configuration program to allow the behavior and function of the machine to be changed to meet a customer's requirement. There are three levels of access to the configuration functions of the machine. Access each level is protected by means of a four-digit code. The facilities available at each level are shown below:

   1.1. Operator level access

   - Access to price related features only
   - Factory default Code 1111

   1.2. Manager level access

   - Access to price related features
   - Inhibit selections
   - Limited range modification of recipes
   - Change Operator level access code
   - Factory default Code 3333

   1.3. Engineer level access

   - Full access all features
   - Factory default Code 4444

ACCESSING THE USER PROGRAMS

2. The programs are accessed by pressing key 5 **(PROG)** on the INTERNAL keypad. The EXTERNAL display will then prompt for input of a four-digit entry code. The code is input using the numbers printed on the keys of the INTERNAL keypad.

   (1) After pressing the PROG key the display will change to: -

PLEASE ENTER ACCESS CODE

   (2) Use the numbered keys on the internal keypad to enter the correct code. It is not necessary to press ENTER. The code will be checked on entry of the fourth digit. Three attempts are allowed before the PROG key must be pressed again. On entry of a valid code the display will change to the menu heading appropriate to the level of access. Whilst in programming mode the functions of the external key pad change to facilitate navigation of the program using the EXTERNAL keypad.

   (3) In the event that the code has been lost or when fitting an un-programmed replacement board it is necessary to complete the circuit between the two pins of the two pin header labelled ENG LINK on the Control board. This forces recognition of any four-digit code. Note, it is safest to avoid entering the default managers or operators code in these circumstances because entry of a valid code will be recognised in preference to the combination of a wrong code plus the ENG LINK and restricted access granted.

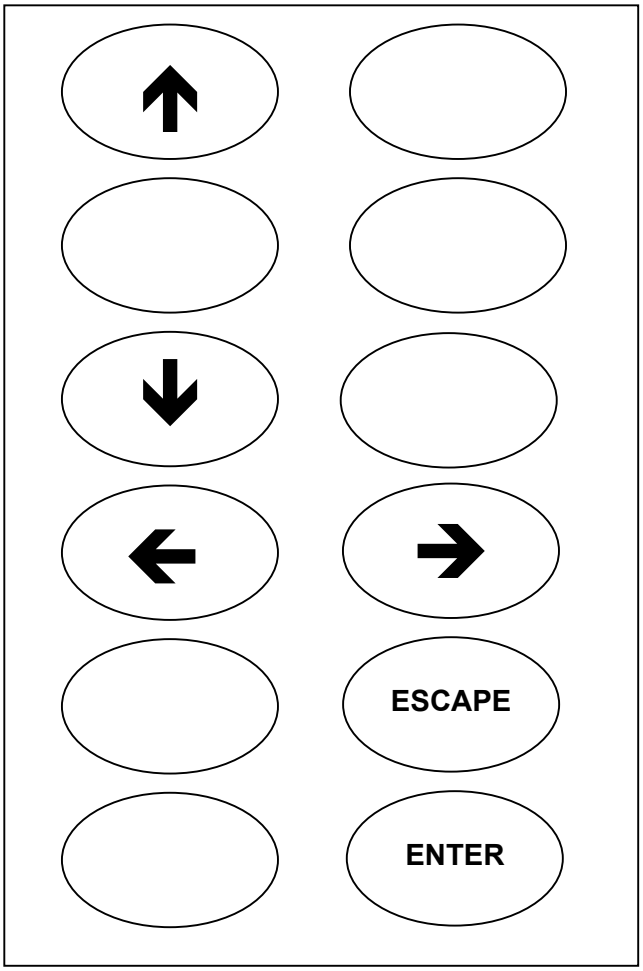
   Note Regarding The ENG LINK

   The Studio Tabletop electronics control system has two major elements these are the Control board and the DC RIO board. The two boards communicate via a three wire Inter Integrated Circuit bus (I^2C bus). Some faults affecting the I^2C bus or Control board configuration can result in persistent system resets, which take place before a code can be entered. To allow recovery / diagnosis from such situations the control system provides an Access Window to a special ‘safe mode’ shortly after power is switched on. If the engineers mode is entered during this window the machine will enter the program with the I^2C bus disabled. Without communication between the DC RIO board and the Control board the OUTPUT TEST facility is ineffective and the state of some inputs will be misreported in the INPUT TEST routines. As a reminder to this effect the sound associated with a key press is truncated to a very short pip rather than a beep. **If the ENG LINK is left in place during power up the machine will enter the engineers program with full access during the Access Window.**

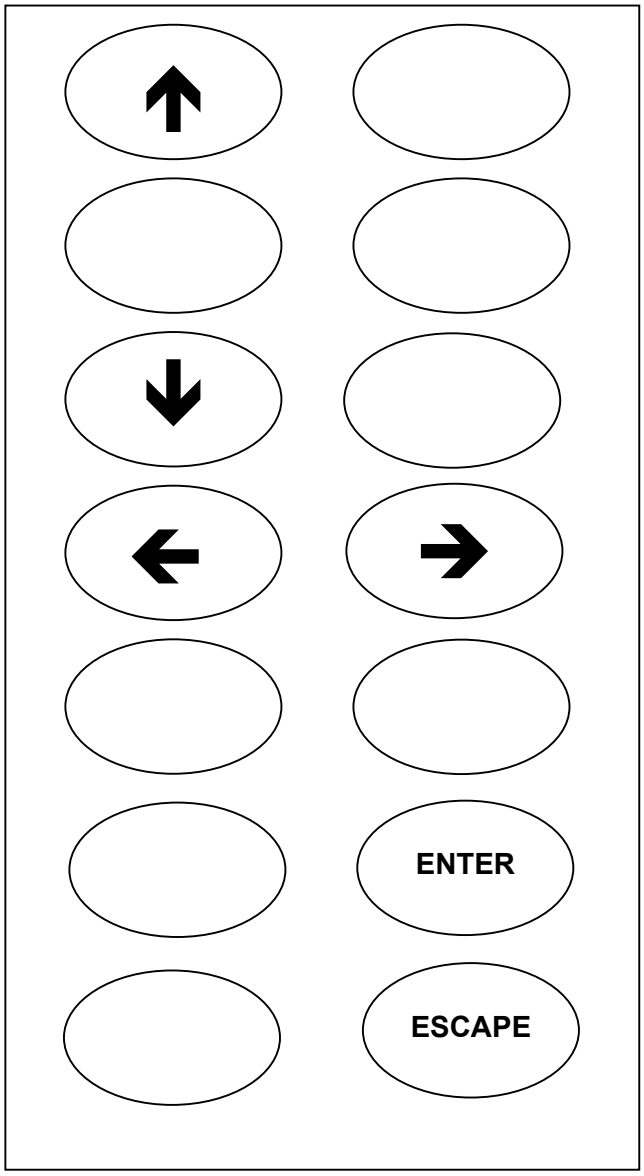
EXTERNAL KEYPAD FUNCTIONS IN PROGRAMMING MODE

3. Having entered a valid code, the keys on the EXTERNAL keypad are used to navigate and use the functions of the user programs. In programming mode the keys assume the following alternative functions:

12 Button Version



14 Button Version



FUNCTION	KEY
Move up a list of menu options or increment a number.	↑
Move down a list of menu options or decrement a number.	↓
Move the cursor left.	←
Move the cursor right.	→
Move to previous menu option or reject values entered.	**ESCAPE**
Enter the menu option displayed or accept the changes made.	**ENTER**

PROGRAM FUNCTIONS

4. The following table shows the functions available and the access level required to use them within the Studio Tabletop configuration program:

FUNCTION	ACCESS LEVEL REQUIRED		
	OPERATOR	MANAGER	ENGINEER
INGREDIENT TIMES		• limited	•
SET DATE /TIME		•	•
SET PRICING MODE	•	•	•
CHANGE PRICES	•	•	•
INHIBIT DRINK		•	•
ALTER DRINK NAME		•	•
TIMED ACTIVITIES			•
TEMP SETTINGS			•
OUTPUT TEST			•
INPUT TEST			•
SET PRODUCT CONSTS			•
MACHINE STATUS			•
SET DRY VEND MODE			•
SERIAL NUMBER			•
CONFIGURE MACHINE			•
MDB CONFIG			•
EVA-DTS CONFIG			•
PRODUCT CODES			•
OPERATORS CODE		•	•
MANAGERS CODE			•
ENGINEERS CODE			•
EDITABLE TEXT			•
CARD ACTIONS			•
EDIT DRINK MAP			•

PROGRAMMING SEQUENCE OF OPERATIONS

5. The method of navigating the menu structure is consistent throughout the program. The ↑ and ↓ keys are used to index through the headings in a particular level or increment / decrement a value. Pressing ENTER will select a submenu or confirm a change whilst ESCAPE will reject a change or return to the previous menu level. The sequence for accessing a menu option, and then accessing a submenu within that option and finally selecting and changing a parameters value, is shown diagrammatically in Fig 3.1.

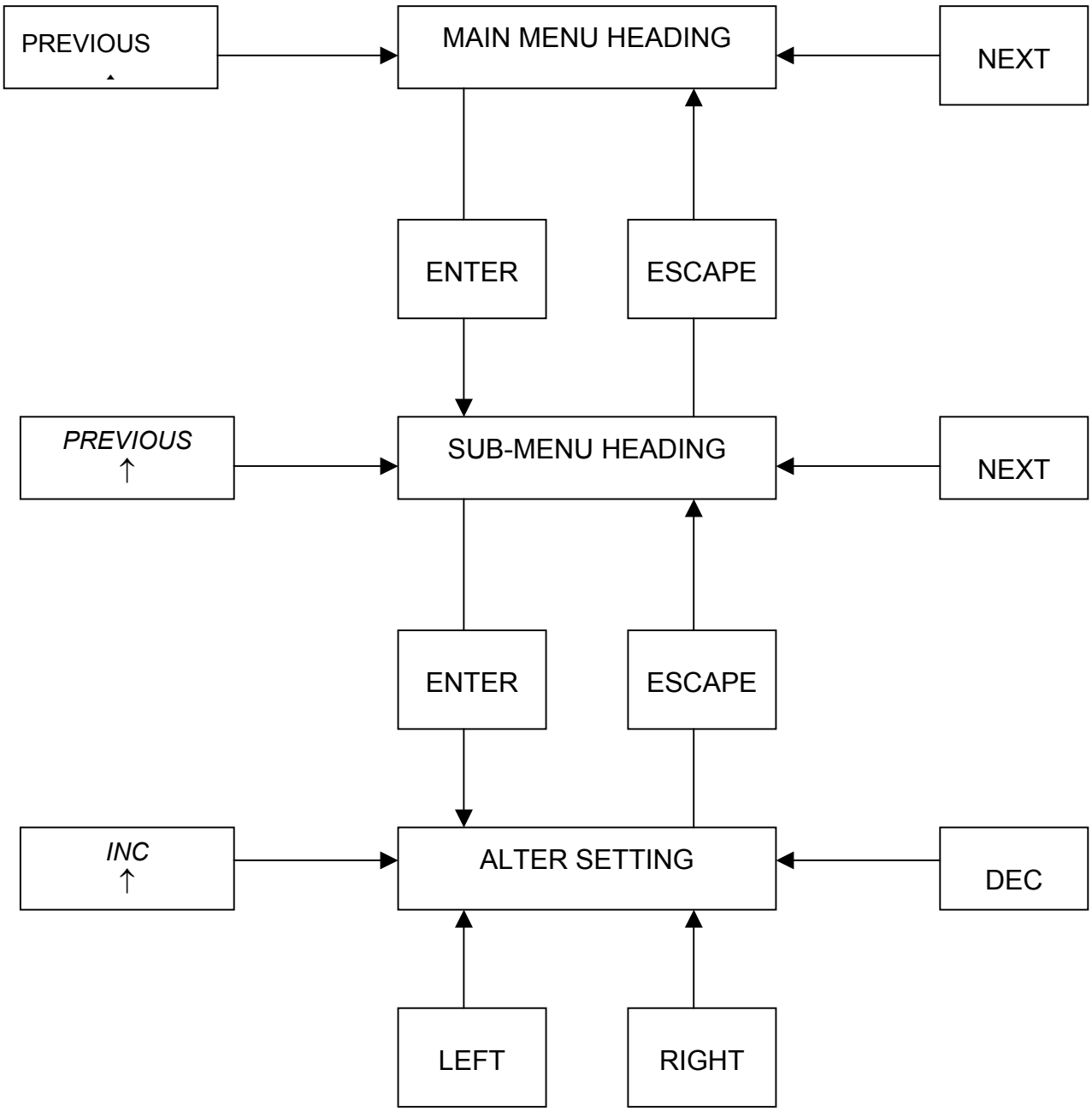


Fig. 3. 1. ACCESSING AN OPTION SETTING – FLOW DIAGRAM

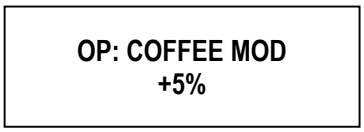
MENU OPTIONS

INGREDIENT TIMES

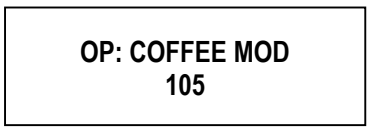
6. INGREDIENT TIMES provides access to a set of submenus, which allow modification of the parameters controlling the recipe and dispensing of individual drinks. The actual content of the sub menu is dependent on the configuration of the machine. That is for example a Studio Tabletop Instant Hot version will have different drinks in its INGREDIENT TIMES sub menu to a Double Freshbrew version fitted with a carbonator. In general the entries of the INGREDIENT TIMES menu will consist only of the drinks available on that particular configuration of machine. The Studio Tabletop range has a number of pre-defined configurations. For each configuration each selection button is associated with a particular drink. This association is fixed for each configuration. For example if the top left button in a given configuration provides an instant Coffee drink then the COFFEE entry in the INGREDIENT sub menu will allow adjustment of a limited number of parameters relating to a coffee selection.

   This facility can only be used to edit the settings related to the current drink; it is not possible to reprogram the button to behave as a completely different drink e.g. an Espreschoc using this facility. A separate menu option, EDIT DRINK MAP, is available to achieve this purpose.

   For each selection a user with Manager level access is granted a limited range adjustment on a subset of the parameters. This allows the site-based personnel to perform minor taste profile modifications without the need to call an engineer. The limited range adjustment is implemented as a multiplying scale factor of between 75% and 125%. In managers mode the limited range of adjustment permitted is displayed as a signed value between –25% and +25% and can be changed in 5% increments. For example the limited range strength control for the coffee ingredient of an Espreschoc selection, which has had its coffee ingredient increased by 5% would appear to a manager level user as:



   When viewed with engineers level access this would appear as:



   In each case the same parameter is being viewed.

   The following tables describe the parameters that can be adjusted for each drink, and indicate the parameters visible at the different each access levels. The drinks available in each configuration are described in Table 26.A later in this Section.

INSTANT COFFEE	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
COFFEE TIME	Ingredient Control	.1 s	E
COFFEE ADJUST	Increment applied to coffee auger run time when strong selected	.1 s	E
WATER TIME	Coffee water dispense valve open duration	.1 s	E
COF MIXER TIME	Coffee whipper motor run duration	.1 s	E
WATER SPLIT	Fraction of total water time, above, to be allocated to the milk sugar valve if milk or sugar is selected Eg 75 will allocate 75% of the water to the milk valve	%	E
SUGAR TIME	Auger run time for Optional ingredient if selected	.1 s	E
SUGAR ADJUSTMENT	Increment applied to sugar auger run time when extra sugar selected	.1 s	E
MILK TIME	Auger run time for Optional ingredient if selected	.1 s	E
MILK ADJUSTMENT	Increment applied to milk auger run time when extra milk selected	.1 s	E
VALVE FACTOR	Compensating variable to account for differing flow rates between milk/sugar and tea valves. If white/sugar drink is bigger than black version decrease, if bigger increase	.1s	E
OP: Sugar Mod	Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP:Sugar mod /100	%	E ,M
OP: Milk Mod	Manager level control applied to MILK TIME The actual milk auger run time will be MILK TIME x OP:Milk mod /100	%	E,M
OP: Coffee Mod	Manager level control applied to COFFEE TIME The actual coffee auger run time will be COFFEE TIME x OP:Coffee Mod /100	%	E,M
OP: Water Mod	Manager level control applied to COF WATER TIME The actual milk auger run time will be COF' WATER TIME x OP:Water Mod/100	%	E,M

CHOCOMILK	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
CHOCOLATE START	Start time for the Chocolate ingredient motor referenced to t=0	.1 s	E
CHOCOLATE TIME	Auger run time for Chocolate ingredient	.1 s	E
MILK START	Start time for the milk components of the drink referenced to t=0	.1 s	E
MILK TIME	Auger run time for milk ingredient	.1s	E
CHOC WATER TIME	Chocolate dispense valve open duration	.1s	E
CHOC MIXER TIME	Chocolate mixer motor run time	.1s	E
MILK WATER TIME	Milk dispense valve open duration	.1s	E
MILK MIXER TIME	Milk mixer motor run time	.1s	E
OP: Milk Mod	Manager level control applied to Topping TIME The actual toppingauger run time will be TOPPING TIME x OP:Topping Mod/100	%	E,M
OP: Chocolate Mod	Manager level control applied to CHOCOLATE TIME The actual coffee auger run time will be TEA TIME x OP:Chocolate Mod /100	%	E,M
OP: Water Mod	Manager level control applied to WATER TIME The actual milk auger run time will be WATER TIME x OP:Water Mod/100	%	E,M

DECAF COFFEE	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
COFFEE TIME	Ingredient Control	.1 s	E
COFFEE ADJUST	Increment applied to coffee auger run time when strong selected	.1 s	E
WATER TIME	Coffee water dispense valve open duration	.1 s	E
MIXER TIME	Coffee whipper motor run duration	.1 s	E
WATER SPLIT	Fraction of total water time, above, to be allocated to the milk sugar valve if milk or sugar is selected	%	E
SUGAR TIME	Auger run time for Optional ingredient if selected	.1 s	E
SUGAR ADJUSTMENT	Increment applied to sugar auger run time when extra sugar selected	.1 s	E
MILK TIME	Auger run time for Optional ingredient if selected	.1 s	E
MILK ADJUSTMENT	Increment applied to milk auger run time when extra milk selected	.1 s	E
VALVE FACTOR	Compensating variable to account for differing flow rates between milk/sugar and tea valves. If white/sugar drink is bigger than black version decrease, if bigger increase	.1s	E
OP: Sugar Mod	Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP:Sugar mod /100	%	E,M
OP: Milk Mod	Manager level control applied to MILK TIME The actual milk auger run time will be MILK TIME x OP:Milk mod /100	%	E,M
OP: Coffee Mod	Manager level control applied to COFFEE TIME The actual coffee auger run time will be COFFEE TIME x OP:Coffee Mod /100	%	E,M
OP: Water Mod	Manager level control applied to COF WATER TIME The actual milk auger run time will be COF' WATER TIME x OP:Water Mod/100	%	E,M

CAPPUCCINO (INSTANT COFFEE)	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
COFFEE WTR TIME	Coffee water dispense valve open duration	.1 s	E
MILK WATER TIME	Milk water dispense valve open duration	.1 s	E
CHOC WATER TIME	Chocolate water dispense valve open duration	.1 s	E
MILK TIME	Auger run time for milk ingredient	.1 s	E
CHOCOLATE TIME	Auger run time for chocolate ingredient	.1 s	E
CHOCOLATE OFFSET	Start time for the chocolate components of the drink referenced to t=0	.1 s	E
COF MIXER TIME	Coffee whipper motor run duration	.1 s	E
COFFEE TIME	Auger run time for coffee ingredient	.1 s	E
COFFEE ADJUST	Increment applied to coffee ingredient if strong selected	.1 s	E
SUGAR TIME	Auger run time for Optional ingredient if selected	.1 s	E
SUGAR ADJUSTMENT	Increment applied to sugar auger run time when extra sugar selected	.1 s	E
COFFEE START	Offset from t=0 applied to all coffee related components. Ensures drink with white head.	.1 s	E
OP: Sugar Mod	Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP:Sugar mod /100	%	E,M
OP: Topping Mod	Manager level control applied to MILK TIME The actual milk auger run time will be MILK TIME x OP:Milk mod /100	%	E,M
OP: Coffee Mod	Manager level control applied to COFFEE TIME The actual coffee auger run time will be COFFEE TIME x OP:Coffee Mod /100	%	E,M
OP: Water Mod	Manager level control applied to COF WATER TIME The actual milk auger run time will be COF' WATER TIME x OP:Water Mod/100	%	E,M

CAFÉ LATTE	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
COFFEE TIME	Ingredient Control	.1 s	E
COFFEE ADJUST	Increment applied to coffee auger run time when strong selected	.1 s	E
WATER TIME	Coffee water dispense valve open duration	.1 s	E
COF MIXER TIME	Coffee whipper motor run duration	.1 s	E
WATER SPLIT	Fraction of total water time, above, to be allocated to the milk sugar valve if milk or sugar is selected Eg 75 will allocate 75% of the water to the milk valve	%	E
SUGAR TIME	Auger run time for Optional ingredient if selected	.1 s	E
SUGAR ADJUSTMENT	Increment applied to sugar auger run time when extra sugar selected	.1 s	E
MILK TIME	Auger run time for Optional ingredient if selected	.1 s	E
COFFEE DELAY	Time after t=0 that coffee components of drink start	.1 s	E
VALVE FACTOR	Compensating variable to account for differing flow rates between milk/sugar and tea valves. If white/sugar drink is bigger than black version decrease, if bigger increase	.1s	E
OP: Sugar Mod	Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP:Sugar mod /100	%	E ,M
OP: Coffee Mod	Manager level control applied to COFFEE TIME The actual coffee auger run time will be COFFEE TIME x OP:Coffee Mod /100	%	E,M
OP: Water Mod	Manager level control applied to COF WATER TIME The actual milk auger run time will be COF' WATER TIME x OP:Water Mod/100	%	E,M

ESPRESSO (INSTANT COFFEE)	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
COFFEE TIME	Ingredient Control	.1 s	E
COFFEE ADJUST	Increment applied to coffee auger run time when strong selected	.1 s	E
WATER TIME	Coffee water dispense valve open duration	.1 s	E
WATER SPLIT	Fraction of total water time, above, to be allocated to the milk sugar valve if milk or sugar is selected	%	E
SUGAR TIME	Auger run time for Optional ingredient if selected	.1 s	E
SUGAR ADJUSTMENT	Increment applied to sugar auger run time when extra sugar selected	.1 s	E
MILK TIME	Auger run time for Optional ingredient if selected	.1 s	E
MILK ADJUSTMENT	Increment applied to milk auger run time when extra milk selected	.1 s	E
VALVE FACTOR	Compensating variable to account for differing flow rates between milk/sugar and tea valves. If white/sugar drink is bigger than black version decrease, if bigger increase	.1s	E
OP: Sugar Mod	Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP:Sugar mod /100	%	E,M
OP: Milk Mod	Manager level control applied to MILK TIME The actual milk auger run time will be MILK TIME x OP:Milk mod /100	%	E,M
OP: Coffee Mod	Manager level control applied to COFFEE TIME The actual coffee auger run time will be COFFEE TIME x OP:Coffee Mod /100	%	E,M
OP: Water Mod	Manager level control applied to COF WATER TIME The actual milk auger run time will be COF' WATER TIME x OP:Water Mod/100	%	E,M

ESPRESCHOC (INSTANT COFFEE)	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
CHOCOLATE START	Chocolate ingredient start time referenced to t=0	.1 s	E
CHOCOLATE TIME	Chocolate ingredient auger run time	.1 s	E
MILK START	Milk ingredient start time referenced to t=0	.1 s	E
MILK TIME	Milk ingredient auger run time	.1 s	E
WATER TIME	Total amount of valve opening time for this selection allocation of water to the three bowls is automatic	.1s	E
COFFEE START	Start time for coffee component of this selection. Offset from t=0 for Ingredient, water and mixer	.1s	E
COFFEE TIME	Coffee ingredient auger run time	.1 s	E
CHOC MIXER TIME	Chocolate Mixer run time referenced to t=0 other mixer times are calculated automatically	.1s	E
OP: Milk Mod	Manager level control applied to MILK TIME The actual topping auger run time will be MILK TIME x OP:Milk Mod/100	%	E,M
OP: Choc Mod	Manager level control applied to CHOCOLATE TIME The actual chocolate auger run time will be CHOCOLATE TIME x OP:Choc Mod/100	%	E,M
OP: Coffee Mod	Manager level control applied to COFFEE TIME The actual chocolate auger run time will be COFFEE TIME x OP:Coffee Mod/100	%	E,M
OP: Water Mod	As engineers mode equivalent however the factor is displayed as a value between –25 and +25 % the increments are 5%	%	E,M

MOCCACCINO (INSTANT COFFEE)	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
CHOCOLATE START	Chocolate ingredient start time referenced to t=0	.1 s	E
CHOCOLATE TIME	Chocolate ingredient auger run time	.1 s	E
MILK START	Milk ingredient start time referenced to t=0	.1 s	E
MILK TIME	Milk ingredient auger run time	.1 s	E
WATER TIME	Total amount of valve opening time for this selection allocation of water to the three bowls is automatic	.1s	E
COFFEE START	Start time for coffee component of this selection. Offset from t=0 for ingredient, water and mixer	.1s	E
COFFEE TIME	Coffee ingredient auger run time	.1 s	E
CHOC MIXER TIME	Chocolate Mixer run time referenced to t=0 other mixer times are calculated automatically	.1s	E
OP: Milk Mod	Manager level control applied to MILK TIME The actual topping auger run time will be MILK TIME x OP:Milk Mod/100	%	E,M
OP: Choc Mod	Manager level control applied to CHOCOLATE TIME The actual chocolate auger run time will be CHOCOLATE TIME x OP:Choc Mod/100	%	E,M
OP: Coffee Mod	Manager level control applied to COFFEE TIME The actual chocolate auger run time will be COFFEE TIME x OP:Coffee Mod/100	%	E,M
OP: Water Mod	As engineers mode equivalent however the factor is displayed as a value between –25 and +25 % the increments are 5%	%	E,M

CHOCOLATE	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
CHOCOLATE TIME	Auger run time for Chocolate ingredient	.1 s	E
WATER TIME	Chocolate water dispense valve open duration	.1s	E
MIXER START	Chocolate mixer motor start time referenced to t-=0	.1s	E
MIXER TIME	Chocolate mixer motor run time	.1s	E
OP: Chocolate Mod	Manager level control applied to CHOCOLATE TIME The actual coffee auger run time will be TEA TIME x OP:Chocolate Mod /100	%	E,M
OP: Water Mod	Manager level control applied to WATER TIME The actual milk auger run time will be WATER TIME x OP:Water Mod/100	%	E,M

INSTANT TEA	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
TEA TIME	Auger run time for tea ingredient	.1 s	E
TEA ADJUSTMENT	Increment applied to Tea auger run time when strong selected	.1 s	E
WATER TIME	Tea water dispense valve open duration	.1s	E
WATER SPLIT	Fraction of total water time, above, to be allocated to the milk sugar valve if milk or sugar is selected	%	E
SUGAR TIME	Auger run time for Optional ingredient if selected	.1 s	E
SUGAR ADJUSTMENT	Increment applied to sugar auger run time when extra sugar selected	.1 s	E
MILK TIME	Auger run time for Optional ingredient if selected	.1 s	E
MILK ADJUSTMENT	Increment applied to milk auger run time when extra milk selected	.1 s	E
VALVE FACTOR	Compensating variable to account for differing flow rates between milk/sugar and tea valves. If white/sugar drink is bigger than black version decrease, if bigger increase.	8-14	
OP: Sugar Mod	Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP:Sugar mod /100	%	E,M
OP: Milk Mod	Manager level control applied to MILK TIME The actual milk auger run time will be MILK TIME x OP:Milk mod /100	%	E,M
OP: Tea Mod	Manager level control applied to TEA TIME The actual tea auger run time will be TEA TIME x OP:Tea Mod /100	%	E,M
OP: Water Mod	Manager level control applied to WATER TIME The actual milk auger run time will be WATER TIME x OP:Water Mod/100	%	E,M

FRESH BREW TEA	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
TEA WATER START	Time after start that tea brewer dispense valve opens	.1s	E
TEA WATER TIME	Tea water dispense valve open duration	.1s	E
M&S WATER TIME	Milk/Sugar dispense valve opening time if optional ingredient selected. This will be deducted from the TEA WATER TIME if so used.	.1 s	E
TEA START TIME	Time after start that tea ingredient motor starts	.1s	E
TEA TIME	Auger run time for tea ingredient	.1s	E
TEA ADJUSTMENT	Increment applied to tea auger run time when strong selected	.1 s	E
M&S MIXER START	Mixer start time for the optional milk/sugar component That is the milk/sugar mixer start time ref t=0	.1 s	E
M&S MIXER TIME	Mixer run time for the optional milk/sugar component	.1 s	E
SUGAR TIME	Auger run time for Optional ingredient if selected	.1 s	E
SUGAR ADJUSTMENT	Increment applied to sugar auger run time when extra sugar selected	.01 s	E
MILK TIME	Auger run time for Optional ingredient if selected	.01 s	E
MILK ADJUSTMENT	Increment applied to milk auger run time when extra milk selected	.1 s	E
PAUSE TIME	Delay between first dose of water through brew chamber and the second dose	.1s	E,M
DRAIN TIME	Time to allow tea to drain from the brew chamber before allowing the head to move	.1s	E,M
OP: Sugar Mod	Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP:Sugar mod /100	%	E,M
OP: Milk Mod	Manager level control applied to MILK TIME The actual milk auger run time will be MILK TIME x OP:Milk mod /100	%	E,M
OP: Tea Mod	Manager level control applied to TEA TIME The actual tea auger run time will be TEA TIME x OP:Tea Mod /100	%	E,M
OP: Water Mod	Manager level control applied to WATER TIME The actual milk auger run time will be WATER TIME x OP:Water Mod/100	%	E,M

FRESH BREW COFFEE	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
INFUSION TIME	Delay after coffee & water are added to brew chamber before brewer closes	.1s	E
WATER START TIME	Time after zero that brewer water dispense valve opens	.1s	E
WATER TIME	Coffee brewer dispense valve open duration	%	E
M&S WATER TIME	Milk & Sugar valve opening time		E
VALVE FACTOR	Balancing factor to account for difference in flow rate between Milk/Sugar valve and brewer valve. If white / sugar drink is smaller than black version increase VALVE FACTOR and visa versa. Range 8-14	Ratio X 10	E
COFFEE ING TIME	Ingredient Control	.1 s	E
STRENGTH ADJUST.	Increment applied to coffee auger run time when strong selected	.1s	E
SUGAR TIME	Auger run time for Optional ingredient if selected	.1 s	E
SUGAR ADJUSTMENT	Increment applied to sugar auger run time when extra sugar selected	.01 s	E
MILK TIME	Auger run time for Optional ingredient if selected	.01 s	E
MILK ADJUSTMENT	Increment applied to milk auger run time when extra milk selected	.1 s	E
PUMP 1 DURATION	Duration of first air pump operation	.1 s	E
PUMP 1 DELAY	Inactive period following first air pump operation	.1 s	E
PUMP 2 DURATION	Duration of second air pump operation	.1 s	E
PUMP 2 DELAY	Inactive period following second air pump operation	.1 s	E
MIXER TIME	Run time for coffee mixer motor referenced to the beginning of the first air pump activity	.1 s	E
BLACK DRAIN TIME	Idle time before head retracts following dispense of selection with no optional components	.1 s	E
BLACK DRAIN TIME	Idle time before head retracts following dispense of selection where milk or sugar have been selected	.1 s	E
OP: Sugar Mod	Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP:Sugar mod /100	%	E,M
OP: Milk Mod	Manager level control applied to MILK TIME The actual milk auger run time will be MILK TIME x OP:Milk mod /100	%	E,M
OP: Coffee Mod	Manager level control applied to COFFEE TIME The actual tea auger run time will be COFFEE TIME x OP:Tea Mod /100	%	E,M
OP: Water Mod	Manager level control applied to WATER TIME The actual milk auger run time will be WATER TIME x OP:Water Mod/100	%	E,M

CAPPUCCINO (FRESH BREW COFFEE)	* E indicates engineer access level M indicates manager		
PARAMETER NAME	FUNCTION	UNITS	LEVEL SEE *
MILK START	Start time Milk & sugar components. Referenced to t=0.	.1s	E
INFUSION TIME	Delay after coffee & water are added to brew chamber before brewer closes	.1 s	E
WATER START TIME	Time after zero that brewer water dispense valve opens	.1 s	E
WATER TIME	Coffee brewer dispense valve open duration	.1 s	E
MILK WATER TIME	Milk & Sugar dispense valve open duration	.1s	E
COFFEE ING TIME	Ingredient Control	1. s	E
COFFEE MODIFIER	Increment applied to coffee auger run time when strong selected	.1s	E
MIXER TIME	Run time for coffee mixer motor referenced to the beginning of the first air pump activity	.1 s	E
CHOC WATER TIME	Time after zero that Chocolate dispense valve opens (Normally all chocolate components are set to zero)	.1 s	E
SUGAR WATER TIME	Sugar valve open time if sugar selected if not water is added to topping water	.1 s	E
SUGAR TIME	Auger run time for Optional ingredient if selected	.01 s	E
SUGAR ADJUSTMENT	Increment applied to sugar auger run time when extra sugar selected	.1 s	E
MILK TIME	Auger run time for Milk ingredient motor	.1 s	E
CHOCOLATE TIME	Auger run time for Chocolate ingredient motor (Normally all chocolate components are set to zero)	.1 s	E
CHOCOLATE OFFSET	Start time Milk & sugar components. Referenced to t=0	.1 s	E
PUMP 1 DURATION	Duration of first air pump operation	.1 s	E
PUMP 1 DELAY	Inactive period following first air pump operation	.1 s	E
PUMP 2 DURATION	Duration of second air pump operation	.1 s	E
PUMP 2 DELAY	Inactive period following second air pump operation	.1 s	E
OP: Sugar Mod	Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP:Sugar mod /100	%	E,M
OP: Milk Mod	Manager level control applied to MILK TIME The actual milk auger run time will be MILK TIME x OP:Milk mod /100	%	E,M
OP: Coffee Mod	Manager level control applied to COFFEE TIME The actual tea auger run time will be COFFEE TIME x OP:Tea Mod /100	%	E,M
OP: Water Mod	Manager level control applied to WATER TIME The actual milk auger run time will be WATER TIME x OP:Water Mod/100	%	E,M

EDIT DRINK MAP

7. For each machine type i.e. Instant, SFB Tea or DFB there are a small number of default configurations. Choosing a configuration assigns a drink to each of the seven, (optionally 9), drink selection buttons.

In reality for each combination of canister contents brewer options it is typically only possible to devise a relatively small number of different beverages. Each configuration contains templates for all of the possible beverages, which could be produced by a machine for which it is appropriate.

When a new configuration is chosen seven, (optionally 9), of the possible drinks are assigned to the selection buttons. Table 14 shows all the possible drinks for each configuration. The default assignments are identified with a 'D' the remainder are labelled with and 'a' . This facility provides the method by which the default drink assigned to a selection key can be changed for one of the alternative unused drinks to create alternative menus.

On entering this function, a key number is displayed on the top line of the display, the drink currently assigned to the key is displayed on the bottom line.

(a) For example:

BUTTON NUMBER 5 **MOCCACINO**

The up and down keys can be used to scroll through the drinks assigned to each of the eleven keys.

(b) To change the drink assigned to a given button press ENTER. The display will change to one of the form below:

MOCCACINO **↑↓ ENTER OR ESCAPE**

The up and down keys can be used to scroll through the possible alternative drinks. When the desired alternative is displayed pressing ENTER confirms the change. If it is desired to discard the change pressing ESC will leave the assignment unchanged. The display will revert to the form show in (a).

For many of the drinks both fresh brew and instant versions are possible within the same configuration. For example in a DFB machine with an espresso canister, Café Latte may be made with either fresh or instant coffee. Due to the constraints of the display the name used is CAFÉ LATTE in both cases. At any time during the above process pressing the → arrow will cause additional information about the drink to be displayed. For example when the display is as shown in (b). Pressing → will cause it to change as follows:

(c)

(FRESH CO1) #27 **↑↓ ENTER OR ESCAPE**

The number displayed, #27, is a unique number assigned to the fresh brew based MOCCACINO recipe. The text (FRESH COF1) provides a more intuitive guide that it is made using fresh coffee 1 for the coffee component.

After all drink button re assignments have been made press ESCAPE to exit the facility. The display will change to :

(d)

COMMIT CHANGES **ENTER=YES ESCAPE=NO**

If escape is pressed the machine will remain unchanged. Pressing ENTER will confirm the changes. Only at this point will the changes take effect. A re-initialisation is automatically performed when the drink map is changed. The new menu will be created and default timings assigned to ALL selections.

Notes

This facility should only be used to edit the drink selection menu immediately following installation of a new board and or use of the SET MACHINE TYPE menu in the CONFIGURE MC menu. It may be used to review the assignments at any time provided the changes are not committed on exit.

This function does not provide the facility to create an entirely new drink, merely to substitute one, which it has already determined can be made with the ingredients available in the machine. One cannot, for instance, add a fresh brew coffee drink to a machine without out a coffee brewer.

The same drink cannot be assigned to two keys and set up differently for each. The two keys will map to the same instance of the drink, so changing one will change the other.

Audit data is mapped to the keys, not to the drinks themselves. Changing the drink map on a machine which has been in service will lead to existing audit data now being tied to drinks to which it does not relate. An initialise with the ENGINEERS LINK fitted should be performed first if necessary.

EDITABLE TEXT

8. The Studio Tabletop provides two user definable lines of text. These lines, designated the Select Message Text and the Error Message Text respectively, are displayed at intervals whenever the machine is displaying the select drink or error screens respectively. Each message consists of 1 line of 16 characters.

For example in the select drink state the display could alternate between

Screens displays as below:

SELECT DRINK **CREDIT £0.00**	→ ←	**SELECT DRINK** ***VENDING SERVICES***

For example while a waste tray full error is present the display could alternate between

Screens displays as below:

OUT OF SERVICE **WASTE TRAY FULL**	→ ←	**OUT OF SERVICE** ***TEL EXT 12345***

Where the text shown in *italics* is the optional error message text.

9. The EDIT TEXT menu contains the following sub menus, which can be accessed using the ↑↓ keys:

(a) Edit Select Msg

Allows the programmer to change the line of optional text displayed in the select drink state. On pressing ENTER the display will change to one of the form shown below:

EDIT STRING ↑↓
A

The ↑↓ keys are used to scroll through the available characters. The ← → keys can be used to move the cursor along the line of text. When the correct text has been entered pressing Enter confirms the changes whilst pressing escape discards them.

(b) Edit Error Msg

Allows the programmer to change the line of optional text displayed when the machine is in a fault condition.

(c) Erase Select Msg

Allows the programmer to clear the line of optional select message text.

(d) Erase Error Msg

Allows the programmer to clear the line of optional Error message text

CARD ACTIONS

10. Entering **Card Actions** provides access to a number of submenus, which relate to the operation of the Studio line ranges optional smart card interface. The smart card interface provides the capability for both audit and engineering configuration activities. In the event that the reader is not fitted or an unreadable card is placed in the reader any attempt to enter this menu will result in the message INSERT CARD being displayed. Pressing ESC will return to the main menu. There are two types of card; one type is programmed to hold machine configuration data and the other audit information. The cards are identical; the choice of functionality is made by means of formatting. This must be carried out on a machine before a card can be used. The submenus of CARD ACTIVITIES depend on the type of card inserted and its contents as follows:

(a) FORMAT CARD

Smart cards can be formatted for use as either an audit card or a preset (engineering function) card. A card formatted using the MAKE AUDIT CARD function can only be used to hold audit data and likewise a card formatted using the MAKE PRESET CARD can only be used to hold data files as described in sections a to d above.

Cards formatted as Engineering/configuration cards may hold **one** file of each of the following types:

1. MACHINE

   A file containing all of the data necessary to create an exact copy of a machine set up i.e. to effectively allow a machine to be 'cloned'. This includes drink parameters, general setting, serial number, counters and timed events and prices.

2. CONFIG

   A file containing all of the data necessary to create an copy of a machines operational parameters. This includes only the drink parameters and general setting.

3. PRICE

   A file containing the drink details.

4. EVENTS

   A file containing the details of any timed activities that have been set up.

Cards formatted as AUDIT cards may only hold audit data. Audit data will be written to the card when it is inserted into the reader if the METHOD OF AUDIT in the EVA DTS CONFIG menu has been set to CARD.

(b) LOAD, SAVE & DELETE <filetype> where <filetype> is MACHINE,CONFIG,PRICE or EVENTS

If a card contains a data file of a given type a LOAD & DELETE menu for that file type will be available. If it does not then a SAVE menu to allow its creation will be available. The machine should be switched off and on after loading files.

SET DATE AND TIME

11. Entering SET DATE & TIME provides access to a sub-menu consisting of SET DATE and SET TIME.

(a) Set Date

The SET DATE option allows the programmer to change the displayed date.

(b) Set Time

The SET TIME option allows the programmer to change the displayed time.

The battery fitted to the 54955 Control board has an open circuiting link to prevent discharge during extended periods of storage. When commissioning a new board the links labelled CLOCK BAT on the control board must be fitted otherwise the board will not maintain the time when power is removed.

The 54955 Control board contains a lithium battery. Care should be taken to dispose of this in an appropriate manner should a board be scrapped. The board should not be disposed of by burning.

SET PRICING MODE

12. Entering SET VEND PRICING allows the programmer to select one of the following Pricing modes:

- NORMAL PRICES
- ALL DRINKS FREE
- CHEAP PRICES

The selected mode becomes the default setting to which the machine will return after any timed activities.

CHANGE PRICES

13. Entering CHANGE PRICES provides access to the following sub-menu:

- NORMAL PRICES
- CHEAP PRICES
- CHANGE CUP PRICE

Entering NORMAL PRICES or CHEAP PRICES provides access to a list of drinks with corresponding prices. The price of a displayed drink can be changed by pressing ENTER, altering the value shown, and pressing ENTER again.

Entering CHANGE CUP PRICE allows the programmer to select the price of a plastic cup (and is preset at 0 pence). The value entered here is deducted from the normal price of a drink when there is no requirement for a dispensed plastic cup, i.e. when customers' own cups or mugs are used.

INHIBIT DRINKS

14. Entering INHIBIT DRINKS provides access to a sub-menu of drinks, each one suffixed with the availability (AVAILABLE or INHIBITED). The status of a displayed drink can be changed by pressing ENTER, altering the status by using the UP or DOWN keys, and pressing ENTER again.

ALTER DRINK NAME

15. The ALTER DRINK NAME menu allows the name displayed when a particular drink is selected to be changed to one of a number of pre-defined alternatives.

To avoid confusion the drink retains its original name in this submenu. The alternative name will be used to reference that selection for all other display and audit activities. The reason retaining the original reference to the name in this submenu is that for example it could be that both syrup drinks are to be orange temporarily. Once the lemon name had been changed to orange it would not be possible to tell the altered drink from the existing one when it came time to change it back again.

The list of alternative drink names is as follows:

CHOC-O-CINO	BLACKCURRANT	LEMON
COLA	ORANGE	VEG.SOUP
TOMATO SOUP	BEEF SOUP	CAPPUCCINO
LEMON	PEACH	SOUP
LIME	MUSHR'M SOUP	MILO
CAFE MOCHA	ESPRESCHOC	CAFE CREME
ESPRESSO X 2	CHICKEN SOUP	PEPSI COLA
TROPICAL FRUIT	COCA COLA	DIET COCA COLA
PEPSI-MAX	PEPSI	DIET PEPSI
ORANGE TANGO	LEMON	STILL JUSODA
DIET TANGO LEMON	SPARKLING JUSODA	
IRN-BRU	STILL IRN-BRU	FIZZY IRN-BRU
COFFEE	WHIPPED COFFEE	ELDERFLOWER
VIMTO	COLA	LEMON TEA
SOUP	WHIPPED COFFEE	COFFEE
IMPORIENT TEA	FRESHBEAN COFFEE	FAIRTRADE COFFEE
TETLEY LEAF TEA	TYPHOO LEAF TEA	PG LEAF TEA
GOLD BLEND	NESCAFE COFFEE	KENCO COFFEE
LEMON&LIME	SPARKLING WATER	STILL WATER
COLD WATER	HOTWATER	

Note Changing a drinks name **does not affect** the actual parameters that control the drink. It only affects the name displayed when that selection is chosen or audited. If the name of the chocolate selection is changed to LIME, the chocolate ingredient motor, valves and mixer will still run when that selection is taken. To change the drink rather than the drink name, use the EDIT DRINK MAP facility. Note it is not possible to make drinks corresponding to all of the alternative drink names on all machine versions.

TIMED ACTIVITIES

16. The TIMED ACTIVITIES option allows the machine to be set to different states on a timed basis. The states currently available are as follows:

(a) Reduced causes the machine to offer drinks at the reduced rate.

(b) Free causes the machine to offer drinks free.

(c) Self Clean causes the machine to flush its soluble ingredient mixing systems.

(d) Shutdown causes the machine to stop vending.

(e) Unused timed activity slot not used, operate as normal.

(f) Economy causes the machine to temporarily shutdown until a drink is requested. The water in the boiler is maintained at a reduced temperature and a message prompting potential users to press start and so cause the machine to heat and return to operation is displayed. After a period of inactivity the machine returns to low power mode.

(g) FL'Brew causes the machine to flush its fresh leaf tea and R&G coffee brewing systems. It is recommended that timed flush cycles for the brewer systems are programmed for just before the start and at the end of each period of activity. For example, for a machine located in an office environment this might be at 8.00am and 6pm.

Entering TIMED ACTIVITIES provides access to a sub-menu consisting of ten timed activities. Two types of timing routine, Daily and Block, are available for each activity.

A. Daily

```
DAILY 0930 1730
MON>FRI REDUCED
```

The above display describes a timed activity where, between 9:30am and 5:30pm, Monday to Friday, the machine operates in the reduced prices mode.

B. Block

```
BLOCK 0930 MON>
1730 FRI REDUCED
```

The above display describes a timed activity where, between 9:30am on Monday and 5:30pm on Friday, the machine operates continually in the reduced prices mode.

17. When entering a SELF CLEAN state into a daily routine, a comma will appear between the start and end times, indicating that flushing will occur at the two specified times and not between them. Where only one SELF CLEAN per day is required, the time entered in the second slot should be 1 minute later than the first. If both times entered are the same flushing may not take place.

NOTE The SELF CLEAN state must not be entered in a block routine.

18. The displayed activity can be changed by altering the data using the LEFT, RIGHT, UP and DOWN keys. With the correct data entered, the ENTER key is pressed to move to the next activity, or ESCAPE pressed to leave.

TEMPERATURE SETTINGS

19. Entering TEMP SETTINGS provides access to the following sub-menu:

- DESIRED TEMP
- MINIMUM TEMPERATURE

1. Desired Temperature – allows the desired water heater temperature to be set.

2. Minimum Temperature – allows the minimum temperature at which vending may commence to be set.

The above values are set in degrees centigrade. The minimum possible temperature the control system can measure is 57ºC it is not possible to set temperatures below this value. As addition information the actual value read by the analogue to digital converter on the control board corresponding to the temperature set is displayed in parenthesis next to the ºC value.

OUTPUT TEST (INST VERSION)

20. The OUTPUT TEST allows any of the output devices to be turned on and off to aid with diagnostics. On entering output test the display will show the device name, a prompt indicating that the ↑↓ & ENTER keys are active and a number indicating the position of the device in the list. The arrow keys are used to scroll through the list of devices whilst the ENTER key will activate and de activate the device.

Note 1

It should be noted that some specific devices specifically the SSR, Carousel Motor and Inlet Valve may not respond as anticipated to OUTPUT TEST. The software controlling these devices is constantly running and will quickly override the control action of the output test.

Note 2

The output test function will not work if the engineers program was entered during the ACCESS WINDOW immediately after power up or if the machine was powered up with the ENG LINK in place. See section 3 paragraph 4.

INPUT TEST

21. The INPUT TEST function allows the state of the control board input signals to be examined. The input test menu is common to all three versions of the Studio Line range and as such contains references to all possible input devices. The state of brewer position index inputs will be visible even if the brewers themselves are not fitted on a particular version.

On entering input test, the display will show the device name of the first device in the list and logical state associated with the condition of its input. That is to say the meaning of the state of the input is displayed rather than a simple high or low value. Thus the values displayed for the waste probe are WET or DRY. The screen will dynamically reflect the condition of the input. The ↑↓ keys are used to step through each input in turn. The following input signals can be examined:

INPUT DEVICE	STATE 1	STATE 2
Coffee brewer index	CBREWER HOME	CBREWER NOT HOME
Carousel throat switch	CUPS AVAILABLE	CUPS NOT AVAILABLE
Carousel position switch	CUP DROP IN POS	CUP DROP OUT POS
Dispense arm 'vend position' micro switch	IN V POS ie forward and ready to vend	NOT IN V POS
Dispense arm 'HOME position' micro switch	ARM NOT HOME	DISP ARM HOME
Boiler level probe	BOILER IS WET	BOILER IS DRY
Waste tub probe	WASTE IS WET	WASTE IS DRY
Spare level Input	SPARE IS WET	SPARE IS DRY
User cup sensor	CUPSNS:NO CUP	CUPSNS:NO CUP
Tea brewer index switch	TBREWER NOT HOME	TBREWER HOME
Brewer pressure switch	NO PRESSURE	PRESSURE
Jug switch	0 (Normal)	1 (1=jug or free)

SET PRODUCT CONSTANTS

22. The Studio Tabletop control system maintains a counter for the amount of each ingredient consumed. For these counters to work correctly the throw rate in grams per second actually dispensed from each ingredients canister must be input. One way to determine the correct value is to catch the ingredient dispensed during ten vends of a particular type and then divide the weight of ingredients so dispensed by the auger run time figures set for that vend. For this to work all scale factors must be set to 100.

    If the ingredient counters are not required this facility can safely be ignored. The values entered are for audit purposes only and do not affect the drink formulations or machine operation in any way.

MACHINE STATUS

23. Entering MACHINE STATUS provides access to the status of the following machine features:

- TEMP STATUS
- 1^2C HEALTH
- MEMORY USAGE*
- SOFTWARE VERSION

(a) TEMP STATUS

This display provides information relating to the heater control circuit. A power (PWR) level value and a graphical representation of the drive waveform to the heater are displayed. The temperature reading in degrees centigrade derived from the thermistor probe in the water boiler is displayed along with the analogue-to-digital converter value from which the temperature was calculated is parenthesis.

(b) I^2C Health

This display provides information relating to the 1^2C serial link between the Controller and RIO Boards. A percentage 'health' reading is given, indicating the success rate of communication of the link. A reading of less than 100% may indicate the presence of electrical noise. The number of negative acknowledgements (NACKS) is also recorded.

(c) Software Version

These displays indicate the version of the software installed on the Controller Board. (Program + EPROM = Firmware.) The firmware version should be quoted when seeking advice.

SET DRY VENDS

24. Entering SET DRY VENDS provides access to the following sub-menu:

- VENDS ARE NORMAL
- VENDS ARE DRY

(a) Vends Are Normal.

All vends are dispensed with water as normal.

(b) Vends Are Dry

All vends are dispensed without water. This allows ingredients to be weighed. If a multi-ingredient drink is selected, only those ingredients will be vended.

SERIAL NUMBER

25. Entering SERIAL NUMBER accesses the following sub-menu:

- M/C SERIAL NUMBER
- M/C AUDIT NUMBER

1. M/C Serial Number

The machine serial number consists of 8 digits and identifies the machine on audit trails.

2. M/C Audit Number

The machine audit number indicates the number of audits carried out to date.

CONFIGURE MACHINE

26. Entering CONFIGURE M/C provides access to the following machine configuration sub menu headings:

(a) GENERAL SETTINGS

The GENERAL SETTINGS menu provides access to a number of diverse parameters controlling machine operation that do not naturally group with any of the other control variables.

PARAMETER	**POSSIBLE VALUES** (Default in bold)	
SILENT KEYS	**0** Keys give audible feedback	1 Keys are silent
TOKEN ONLY	**0** Messages appropriate to coins/card system or free	1 Messages appropriate to token only operation
CHIPPER /CHIPKNIP	**1** Suppress credit display if just card system fitted	0 Normal display of credit
FLUSH ALARM	**0** Sound loud siren while flushing	1 Sound siren quietly while flushing
FAN BOOST TIME	**300** Time fan runs at full speed after a vend cycle finishes in tenths of a second.	

PARAMETER	POSSIBLE VALUES (Default in bold)	
WATER SHOT START	**20** (Consult factory before changing) Time after a fresh coffee dispense cycle ends that a grout clearing water shot starts.	
WATER SHOT DUR	**20** (Consult factory before changing) Duration in 1/100 seconds that the water shot described above lasts.	
BELT WARN TIME	**700** Time, in 1/100 seconds, after the pressure sensor should have reported the coffee brew chamber depressurised but has not, that a 'New filter belt' warning is displayed	
BELT FAULT TIME	**2000** Time, in 1/100 seconds, after the pressure sensor should have reported the coffee brew chamber depressurised but has not, that a 'New filter belt' fault occurs	
ROTATION LIMIT	**100** Time, in 1/100 seconds, after the pressure sensor should have reported the coffee brew chamber depressurised but has not, that a decision is made to perform an extra brewer rotation on the next brewer vend.	
NO BELT WARNING	**1** Inhibits the belt warning, meaning that only when the belt fault state is reached does anything get displayed.	0 Enables the belt warning, meaning that warnings are shown before the belt state becomes critical.
ENG MODE TIMEOUT	**0** Do not automatically exit engineers mode	1 (recommended**)** If no key is pressed exit from the engineers program will commence after 30 seconds
MAX EXTRA CUPS	**2** Number of retries at dispensing a cup before a long delay until next cup occurs to deter theft	
CURRENCY SYMBOL	**1** Indicates that all displayed monetary values should be prefixed with a pounds sterling (£) symbol. Other values are :- 0 : No symbol displayed 2 : Euro symbol displayed 3 : Dollar symbol displayed	
SIMCARD LOCATION	**0** Simcard reader is attached to Port J6 of the controller board	1 Simcard reader is attached to Port J4 of the controller board
FREE INPUT	**0** Auxiliary free input disabled.	1 Enable Auxiliary free input.
AUTO START	**0** Dispensing of selection starts only after START button pressed. Very sensible in a build your drink machine!	1 Dispensing of selection starts automatically after 4 seconds of keypad inactivity. Think carefully before enabling this feature.
SECURITY INPUT	**0** Internal keypad operator functions available.	1 Disable internal keypad operator functions for security
GLOBAL SCALING	**170** Size of drink in cc. Assuming machine default parameters and valves were set up to give 170cc then this variable can be used to scale all drinks together to rapidly accommodate changing cup sizes	

(b) The SET MACHINE TYPE menu provides the means by which the control board software is configured to produce the desired menu and work with the appropriate combination of brewers and chillers present in the machine. This operation **must be carried out** when fitting a new or replacement board.

On selecting this option the display will change to one of the following form

STUDIO TYPE #NNN **ABCDEFGHI**

Where ABCDEFGHI is an abbreviated description of the machine configuration and #nnn is the number of the configuration for reference purposes. The ↑↓ keys are used to scroll through the list of possible configurations. Pressing ENTER selects the new configuration.

Initialisation will proceed automatically from this point. Whilst the set up process takes place the LCD indicates the status of the procedure. On completion the screen reverts to the SET MACHINE TYPE menu. In order to aid understanding the following table contains an explanation of the abbreviations used in the configuration descriptions.

ABBREVIATION	EXPLANATION
INSTANT	All drinks made from soluble products
SFBT	Tea selections are fresh brew
SFBC	Coffee selections are fresh brew
DFB	Tea and regular coffee are fresh brew
Numeric suffix	Sub configuration identifier

Care should be exercised when using this option, as all previous settings will be lost.

At the time of writing there are 4 configurations. The abbreviated machine description and menu associated with each configuration is shown in the following table.

D = In mapping by default a = Available alternate. **MAPPING IDENTIFICATION**	FRESHBREW COFFEE 1	FRESHBREW COFFEE 2	FRESH ESPRESSO 1	FRESH TEA	INSTANT COFFEE	INSTANT ESPRESSO	INSTANT CAPPUCCINO	INSTANT ESPRESCHOC	CHOCOLATE	CHOCOMILK	INSTANT DECAF	FRESH ESPRESSO 2	HOT WATER	CUP ONLY	FRESH CAPPUCCINO	INSTANT MOCHA	FRESH ESPRESCHOC	INSTANT TEA	INSTANT LATTE	FRESH MOCHA	FRESH LATTE
1 : INSTANT					**D**	**D**	**D**	**A**	**D**	**D**	**A**		a	a		a		**D**	**D**		
2. SFB COFEE	**D**	a	a			**D**			**D**	**D**			a	a	**D**		a	**D**	**D**	a	**D**
3 : SFB TEA				**D**	**D**	**D**	**D**	**A**	**D**	**D**	**A**		a	a		a			**D**		
4. DFB COFEE	**D**	a	a	**D**		**D**			**D**	**D**			a	a	**D**		a		**D**	a	**D**

Table 26. A. MACHINE CONFIGURATION MATRIX

(c) CASH SYSTEM

Existing versions of the Studio Line range of equipment support MDB change giving coin mechanisms, card reader units and bill validators, and Digicard cashless payment systems. This option in this sub-menu allows the type of credit device to be selected. At present NO SYSTEM, MDB PROTOCOL and DIGICARD ONLY are the only options, however other choices to allow the selection of proprietary systems may be added in future versions.

If no payment system is connected NO SYSTEM should be selected.

To enable an MDB peripheral MDB PROTOCOL should be selected. If MDB PROTOCOL is selected and communication with at least one peripheral does not take place the error screen below will de displayed.

OUT OF SERVICE
MECH LINK ERROR

In MDB PROTOCOL mode, a Digicard device may also be connected and used, but MDB will be the primary protocol, and the messages displayed will be appropriate to the type of MDB device.

In DIGICARD ONLY mode, no MDB devices will be supported, and all payment system messages will relate to the Digicard.

(d) JUG SETTINGS

The Studio Line machine can be switched to a special 'Jug Mode' using a keyed switch located on the RHS inset panel. Whilst in this mode the machine will automatically repeat a number of cycles of a selected single cup portion. The number of repetitions can be altered by repeatedly pressing the selections' key to increase the number of cycles. When the number of cycles reaches a programmable maximum it resets to one.

By default only the black coffee, decaf and tea selections can be selected in jug mode How ever it is possible to override this to enable pot of white / sugared tea and coffee. A further override forces the entire menu to be available. The following table summarises the function of the jug mode parameters:

PARAMETER	FUNCTION
MAX CUPS IN JUG	Maximum number of cycles allowed
JUG KEY=FREE KEY	Re assign jug key to work as a free key. Default = NO
OPTIONS ON JUGS	Allow milk /sugar to be selected Default = NO
ALL DRINKS JUGABLE	Allow all menu items to be jugged Default = NO
PRICED JUGS	Enables paid vending for jugs. If enabled, credit will be tested individually for each single vend within the jug vend. Default = NO

(e) HARDWARE SETTINGS

This sub menu allows some machine components to be disabled to allow limited functionality to be restored in the event of a failure. For example in the event that one of the cup sensor PCBs fails, it is possible to inform the control system that these are not fitted. Likewise in the event of a brewer failure setting the COFFEE BREWER to NO will allow any selections not reliant on the brewer to operate. Whilst all possible system components are visible in this sub menu, irrespective of the machines configuration, it is only meaningful to ENABLE components that actually exist in the machine. Thus it makes no sense to set TEA BREWER to YES on an all-instant machine and indeed will result in an IO MAPPING ERROR.

PARAMETER	FUNCTION
CUP SENSORS	Enable disable user cup sensors default is YES sensors fitted.
DISPENSE ARM	Enable moving dispense head. Default is YES. Can be usefully disabled only for diagnostics. The machine cannot operate with this item deselected.
TEA BREWER	Enable Tea brewer – Default for fresh brew machine configurations is YES for Instant configurations NO.
COFFEE BREWER	Enable Coffee brewer – Default for double fresh brew configurations is YES. Instant and single fresh brew configurations NO.
NO CUP MECH	Allows a machine to operate without a cup unit fitted i.e. reliant on users providing their own cups. Default is NO i.e. there is a cup mechanism fitted

MDB CONFIG

27. This menu provides the means to modify parameters related to MDB peripherals connected to the machine. At present these are limited to those associated with a change giving coin mechanism. However as support for additional peripherals is added so additional settings will be added as appropriate.

The following table lists the sub menus and parameters that are configurable:

PARAMETER	DESCRIPTION
MAX CREDIT	This monetary value defines the largest amount that can be accepted by the mechanism. Once the displayed credit reaches the value set in MAX CREDIT no further coins will be accepted
EXACT CHANG LIM	This monetary value represents the value of coins remaining in the change tubes below which the EXACT CHANGE message is displayed. Note for the audit system to work correctly it is important that all coins are inserted via the coin insert slot. Ie not placed directly in the change tubes.
VEND BEFORE CHANGE	Possible values are YES and NO. When set to YES change will not be given until a vend cycle has taken place.
CHANGER MODE	Possible values are SINGLE VEND and MULTI VEND When set to MULTI VEND change will only be paid in response to depression of the escrow lever. When set to SINGLE VEND change will be given automatically following the vend cycle or in response to depression of the escrow lever.
AUTO CONFIGURE ACCEPTANCE MASKS	This utility auto-configures the coin acceptance masks to match the coin changer being used. The EXACT CHANGE mask is configured to accept only the coins that can be routed to the changer's tubes, and the NORMAL mask is configured to accept any coin which the changer accepts.
ENABLED COINS EXACT CHANGE	This variable controls which coins are accepted in circumstances where the exact change message would be displayed. The MDB protocol provides for up to 16 coins. For the purposes of enabling or disabling acceptance, the coins are represented by the letters A through to P with A being the least value coin. The acceptance status of each coin is shown by a 1 or 0 below the corresponding letter. One indicates acceptance and zero rejection. PONMLKJIHGFEDCBA 0000000000000000111 Applied to a silver only changer with 5,10,20 & 50p coin tubes the above setting will enable acceptance of the 5, 10 & 20p coins.
ENABLED COINS NORMAL	This variable controls which of the coins that an attached changer is programmed to accept should actually be accepted in normal operation i.e. other than exact change mode. For the purpose of changing the coins to be accepted the procedure is the same as for Enable Coins Exact Change above.
ENABLED NOTES EXACT CHANGE	This variable controls which notes are accepted in circumstances where the exact change message would be displayed. The MDB protocol provides for up to 16 types of note. For the purpose of changing the notes to be accepted the procedure is the same as for Enable Coins Exact Change above.
ENABLED NOTES NORMAL	This variable controls which of the notes that an attached validator is programmed to accept should actually be accepted in normal operation i.e. other than exact change mode. For the purpose of changing the notes to be accepted the procedure is the same as for Enable Coins Exact Change above.

(f) METHOD OF AUDIT

PARAMETER	DESCRIPTION
AUDIT METHOD	Possible values are DDCMP, DEX-UCS, CARD, PRINTED AUDIT or DISABLED. DDCMP selects infrared or direct connect audit. DEX-UCS and PRINTED AUDIT select direct connect, CARD selects the smart card interface. DISABLED turns off the audit system.

(g) AUDIT CONFIG

PARAMETER	DESCRIPTION
SECURITY CODE	Default 0 – Any data carrier may audit the machine The code is set by a data carrier. Once set by a carrier only a carrier with the appropriate code may access the machine.
PASS CODE	Default 0 – Any data carrier may audit the machine The code is set by a data carrier. Once set by a carrier only a carrier with the appropriate code may access the machine.
STATION ADDRESS	Default 7 – Identifies the unit as a VMC for audit purposes.

Section 4
Installation & Commissioning

INTRODUCTION

1. The information given in this Section covers installation, commissioning and maintenance procedures for the Studio Line Beverage Machine. Authorised personnel, who are fully conversant with the equipment, using only the manufacturer's approved parts, must carry out these procedures.

2. Servicing personnel must be familiar with the SAFETY WARNINGS listed on page before undertaking any installation, commissioning or maintenance procedure on the beverage machine. Any procedure, which is found to be impracticable, inadequate or inaccurate, should be reported to the Management for further investigation.

3. The requirements of proper hygiene in respect of food products must be ensured at every level of contact with the beverage machine and the ingredients associated with it.

SAFETY WARNINGS

1. Maintenance of the beverage machine is only to be undertaken by trained personnel who are fully aware of the dangers involved and who have taken adequate precautions, e.g. ensuring that, whenever possible, the beverage machine is isolated from the mains electrical supply.

2. Lethal voltages are exposed when any panel inside the cabinet is removed and the mains electrical supply is available (i.e. on/off switch is overridden). The mains electrical supply is maintained to the Carbonator even when the door is open.

3. The beverage machine must be earthed.

4. Keep clear of the Brewer Unit when it is indexing.

5. The beverage machine is a heavy item. Ensure that sufficient personnel are available for lifting and transporting the machine. Use proper lifting procedures and equipment.

6. The water in the heater tank, and the tank itself, are hot enough to scald or burn, even some time after the machine has been switched off. The water heater tank must be drained, filled with cold water and drained again before any attempt is made to handle it or any of its associated parts.

7. The Controller Board is fitted with a lithium battery. Abuse of this type of battery can lead to overheating, venting, explosion, release of potentially hazardous materials and spontaneous ignition.

   The lithium battery must not be charged or connected to any other source of power. The battery must not be short-circuited or forced to discharge its stored energy. The battery must not be subjected to physical damage or overheating. If the Controller Board is to be replaced, it must be handled with care, taking all practical anti-static precautions.

SERVICES REQUIRED, WEIGHT AND DIMENSIONS

4.

(a) Electrical Supply: 240V, 50Hz, 13A fused.

(b) Water Supply: 15mm BSP stopcock - 1 bar min, 8 bar max.

A double check valve MUST be fitted and for Hot and Cold Still Machines a 35psi regulator must be fitted.

INSTALLATION

5.

WARNINGS

(1) THE BEVERAGE MACHINE IS A HEAVY ITEM. ENSURE THAT SUFFICIENT PERSONNEL ARE AVAILABLE FOR LIFTING AND TRANSPORTING THE MACHINE. USE PROPER LIFTING PROCEDURES AND EQUIPMENT.

(2) ENSURE THAT THE MAINS ELECTRICAL SUPPLY IS ISOLATED BEFORE CONNECTING THE ELECTRICAL SUPPLY CABLE TO THE MACHINE.

(3) ENSURE THAT THE MAINS WATER SUPPLY IS ISOLATED BEFORE CONNECTING THE WATER SUPPLY HOSE TO THE MACHINE.

(4) THE BEVERAGE MACHINE MUST BE EARTHED.

(5) DO NOT EARTH THE BEVERAGE MACHINE TO THE MAINS WATER SUPPLY PIPE.

LOCATION

6. Locate the beverage machine close to the appropriate electrical and water services, with a minimum of 100mm (4in) clearance between the rear of the cabinet and the wall to allow adequate ventilation. If situating in a corner location, do not install closer to the right hand wall less than 400mm (16in) to accommodate opening of the door.

LEVELLING

7. The machine should be levelled both fore and aft and side-to-side by adjustment of the four levelling feet, using a spirit level on the cabinet floor to check for level. Incorrect levelling of the machine can result in cup drop failures, door misalignment and Coin Mechanism malfunctions.

CONNECTING THE WATER SERVICES

8. The water supply should be taken from a 15mm rising main at a pressure of between 1 to 8 bar and should be fitted with a stopcock to isolate the supply during servicing. A double check valve must be fitted to the machine and when installing a Hot/Cold still machine, a water pressure regulator set at 35psi should be fitted.

9. The outlet should be fitted with BSP connections and must be positioned within 1.5m of the

machine to ensure correct fitting of the hose. If possible, the outlet should be located behind the machine to prevent misuse.

10. Before connecting the machine hose to the mains outlet, flush the system via the stopcock to remove any impurities, which may have accumulated in the mains supply pipe.

11. Connect the machine hose to the mains outlet using the seals supplied and ensure that all fittings are tight. Turn on the water supply at the stopcock and check for leaks, both behind and inside the machine.

CONNECTING THE ELECTRICAL SERVICES

12. The beverage machine mains cable is fitted with a moulded 13A fused plug and is connected:

- GREEN and YELLOW wire to the EARTH terminal (E)
- BLUE wire to the NEUTRAL terminal (N)
- BROWN wire to the LIVE terminal (L)

13. Connect the mains cable plug to a switched 24OV, 5OHz, 13A supply socket. Preferably, the switched outlet should be located behind the machine to prevent accidental damage or misuse. With the plug fitted to the socket, ensure that the cable is not being stretched, distorted or fouled.

COMMISSIONING

WARNINGS

(1) LETHAL VOLTAGES ARE EXPOSED WHEN ANY PANEL INSIDE THE CABINET IS REMOVED AND MAINS ELECTRICAL SUPPLY IS AVAILABLE (I.E. ON/OFF SWITCH IS SWITCHED ON).

(2) MAINS ELECTRICAL SUPPLY IS MAINTAINED TO THE CARBONATOR EVEN WHEN THE DOOR IS OPEN.

(3) THE WATER IN THE WATER HEATER IS HOT. AVOID CONTACT WITH WATER LEAKING FROM THE HEATER OR FROM ITS ASSOCIATED VALVES, TUBES AND PIPES.

(4) KEEP CLEAR OF THE BREWER UNIT WHEN IT IS INDEXING.

14. It is essential that the Service Engineer responsible for installing and commissioning the machine ensures that:

(a) all electrical and water supplies are correctly and safely connected;

(b) all covers, panels or access doors are in place and secured, and the machine is left in a SAFE condition;

(c) the Operator is familiar with the SAFETY PRECAUTIONS for the machine.

(d) the importance of hygiene and regular cleaning is fully appreciated by the Operator.

15. With the water and electrical supplies available to the machine, check the operation of the water heater as follows:

(1) Isolate the mains electrical supply from the machine.

(2) Open the cabinet door and check that the on/off switch is in the OFF position.

(3) Remove the ingredient canisters and back panels.

(4) Ensure that the water heater overflow pipe is not trapped.

(5) Restore the electrical supply to the machine.

(6) Using the main switch, set to the ON position.

(7) Check that the water heater fills with water and that the water supply cuts off when the correct level is reached, i.e. no water overflows into the waste bucket. Ensure that the waste level probe is located in the waste bucket.

(8) Set the main switch to the OFF position.

WARNING

LETHAL VOLTAGES ARE EXPOSED WHEN ANY PANEL INSIDE THE CABINET IS REMOVED AND MAINS ELECTRICAL SUPPLY IS AVAILABLE (I.E. ON/OFF SWITCH IS SWITCHED ON).

16. Prepare the Carbonator for use as follows:

(1) Isolate the mains electrical supply from the machine.

(2) Remove the front and top covers from the Carbonator, fit the small waste bucket in position in the cabinet and place the Carbonator overflow pipe in the bucket.

(3) Slowly fill the Carbonator water reservoir with cold water up to the overflow level.

(4) Purge the Carbonator of air by opening the shut-off valve for approximately 5 seconds.

(5) Using the seals provided, connect the regulator to the $C0_2$ gas cylinder and check that the $C0_2$ gas pressure is set at 50psi. Secure the cylinder in place in the cabinet.

(6) Turn on the $C0_2$ gas supply and purge the Carbonator by gently lifting the pressure relief valve for approximately 10 seconds.

(7) Place the waste level probe in the waste bucket and refit the front and top covers to the Carbonator.

(8) Restore the mains electrical supply to the machine.

(9) Place the syrup container in the cabinet and insert the stainless steel dip tubes into the container.

Section 5

Setting up a New or Replacement Control Board

The 54955 FMCU Control board used in the Studio Line Vending machine utilises static sensitive components. Precautions for handling static sensitive devices should be observed when handling this item.

1. The Studio Line control board is programmable on two levels. At the lowest level the board's Flash memory, (firmware), can be reprogrammed to enable a wide range of different machines to be controlled. This level of programming requires a PC and special interface equipment and is essentially a factory / main base activity. The firmware programmed into a board can be read from the label fitted to the component side of the board or if placed in a functioning machine using the Machine Status menu, ref section 3 paragraph K.

   For Studio Line machines the software version will typically be of the form STUDIO2_XX. Where STUDIO2_ denotes the program and XX is a number defining the version. New versions will be generated to support customer specific configurations and behaviours. It is therefore important to check that the firmware programmed into a board is appropriate to the machine to which it is to be fitted, as older versions may not support a particular machine type.

2. The second level of programming involves setting up the board to operate the correct predefined menu configuration for the machine to which it is fitted. This section details the procedure to be to achieve this.

   (1) Switch of the machine.

   (2) Fit the new board and plug in all the connectors. It is not possible to put connectors in incorrectly as the plug sizes prevent this.

   (3) Fit the shorting link between the pins CLK BAT to enable the battery support for the clock.

   (4) Fit a shorting link between the pins labelled ENG LINK.

   (5) Turn on the power.

   (6) The display will prompt for an ACCESS CODE either press ENTER or wait – The display will eventually change to INGREDIENT TIMES.

   (7) Select the Appropriate configuration from within the SET MACHINE TYPE sub menu of the CONFIGURE menu using the procedures described in section 3.

   (8) Remove the shorting link from the ENG LINK pins.

   (9) Switch the machine off and on.

   (10) Re Enter programming mode using the default code (4444).

   (11) Enable the MDB protocol if a coin / card system is fitted.

(12) Set up the Operator and Manager level codes if different from the default.

(13) Finally adjust the drink settings as required and test each selection.

Section 6
Exploded Parts Diagrams

STUDIO TABLE TOP SINGLE FRESH BREW TEA
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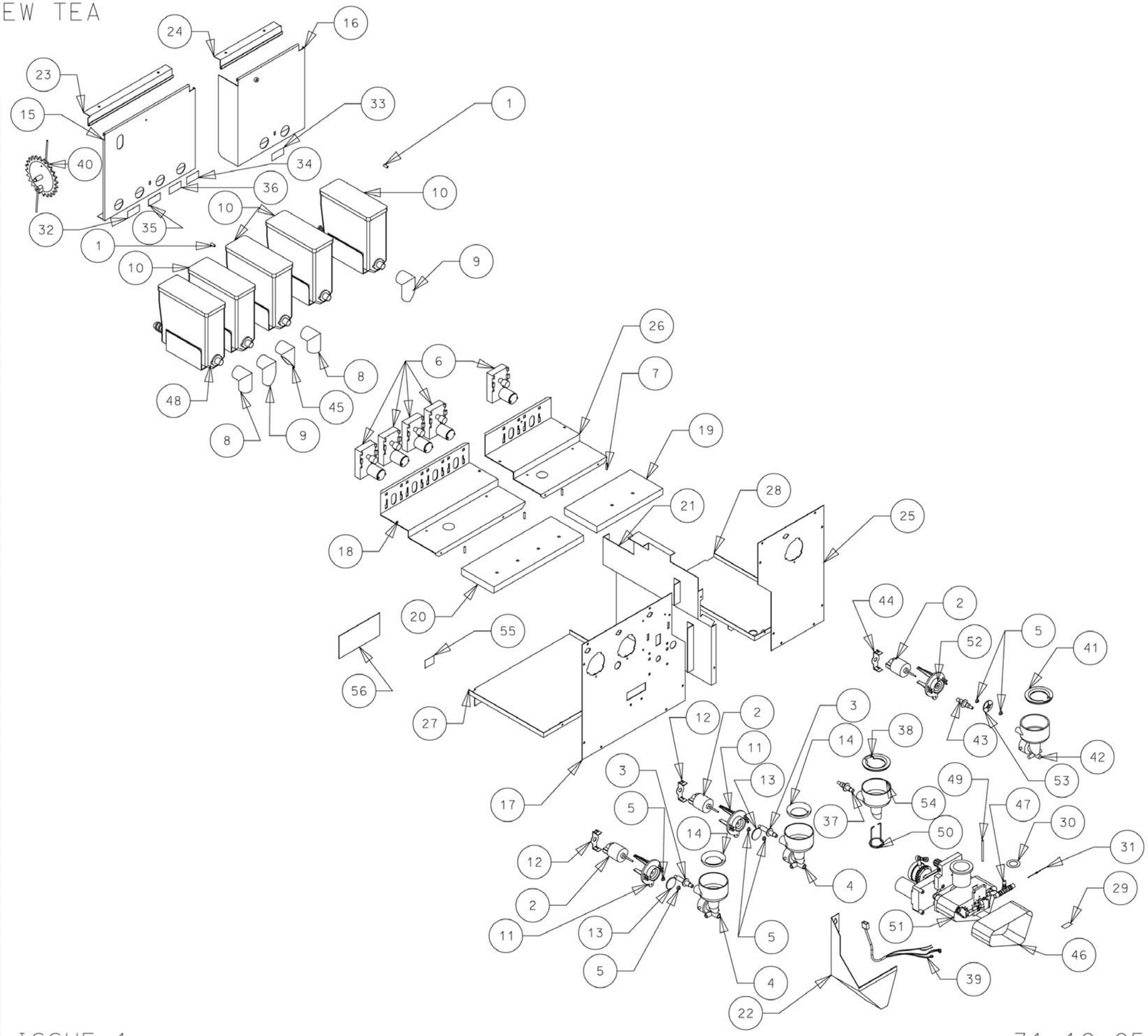
NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Boiler cover spacer verona	54626
2	3	Whipper motor	54645
3	2	Mix bowl inlet pipe grey	54656
4	2	Whipper chamber grey	54658
5	6	Whipper seal	54767
6	5	Ing motor 120rpm	54930
7	4	4mm pin bullet	55639
8	2	Ingredient chute central	56028
9	2	L/h chute	56037
10	4	Canister 64mm wire auger	59204
11	2	Whipper base grey	84665
12	2	Motor retainer grey	54649
13	2	Impelor disk grey	54652
14	2	Steam trap grey	54662
15	1	L/h boiler cover	69029
16	1	R/h boiler cover	69050
17	1	Whipper panel	69077
18	1	L/h motor shelf	69079
19	1	R/h extract duct	69080
20	1	L/h extract duct	69081
21	1	Centre panel	69082
22	1	Tea chute	69087
23	1	L/h boiler cover bracket	69088
24	1	R/h boiler cover bracket	69089
25	1	R/h whipper panel	69132
26	1	R/h motor shelf SFB tea	69133
27	1	L/h base plate	69135
28	1	R/h base plate	69136
29	1	Danger label warning disc	10064
30	1	Tea brewer silicone seal	22095
31	1	Capacitor ceramic 1uf F/V	22447
32	1	Canister label chocolate	28209
33	1	Canister label coffee	28210
34	1	Canister label tea	28211
35	1	Canister label milk	28212
36	1	Canister label sugar	28214
37	1	Mix bowl inlet pipe black	54654
38	1	Steam trap black	54660
39	1	Loom brewer tea/coffee verona	55128
40	1	Agitator small wire auger	55187
41	1	Steam trap beige	55214
42	1	Whipper chamber beige	55215
43	1	Mix bowl inlet pipe beige	55241
44	1	Motor retainer beige	55243
45	1	R/h chute	56032
46	1	Tea filter belt	56435
47	1	T piece	56851
48	1	Canister 64 Plastic auger	59059-
49	1	Lcv tea bar	67964
50	1	Tea pot coil	68157
51	1	12 oz rh tea brewer	88100
52	1	Beige whipper base	85247
53	1	Impellor disk beige	55242
54	1	Whipper chamber black cut off	84659
55	1	Warning label	56399
56	1	Caution label hands clear	56626



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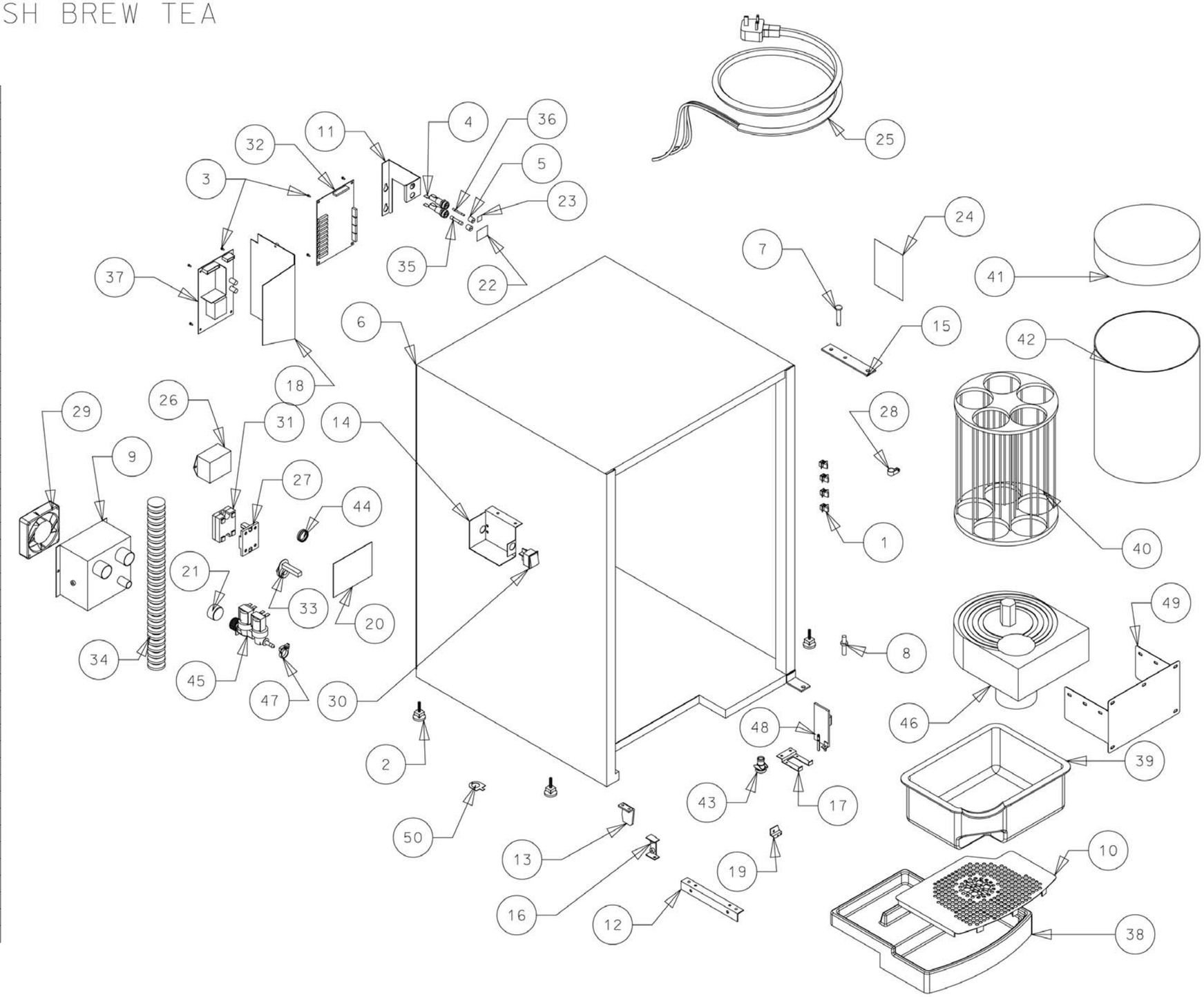
TEA 89131 SHEET 2 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	4	Tie wrap holder snap lock	55217
2	4	Small feet black m8 x 25	55223
3	8	Board support long deep	56271
4	2	16 amp fuseholder bussman	71101
5	2	Cap for fuse holder 71101	71101C
6	1	Cabinet	69083
7	1	Top hinge pin	66616
8	1	Bottom hinge pin	66617
9	1	L.C.V. fanbox	67757
10	1	Drip tray grille	68883
11	1	Fuse panel	69000
12	1	Roller bracket	69070
13	1	Door striker	69085
14	1	Switch box	69086
15	1	Top hinge plate	69095
16	1	Roller guide	69239
17	1	Waggler bracket	69243
18	1	Psu cover	69405
19	1	Tray sensor bracket	69244
20	1	Danger live terminal label	10070
21	1	Dust cover for inlet valve	20014
22	1	Fuse label F5A	22000
23	1	F15 sticker	22022
24	1	Rating plate	28114
25	1	UK mains lead with 13A plug	54416
26	1	Filter unit	54486
27	1	S S R Terminal cover	54552
28	1	P clip NX5	54789
29	1	Extract fan sounon	55239
30	1	Switch rocker on/off verona	55458
31	1	SS relay 240v	55466
32	1	DC rio board	55676
33	1	Mains lead device	55767
34	1	Hose 1 1/4 extra flex	55770
35	1	Fuse 5a 415 (f) 32mm cer	55881
36	1	15A fuse	56114
37	1	Psu dc 100W	56374
38	1	Drip tray	57069
39	1	Waste bucket	57070
40	1	Cup turret	57183
41	1	Cup turret lid	57183_L
42	1	Cup turret celluloid sleave	57183_S
43	1	Bowl adaptor	59041
44	1	Grommet diaphram type	59139
45	1	Inlet valve 24v DC double	59235
46	1	Cup unit 24V DC uk 73mm	59332
47	1	Snapper clip no6	71730
48	1	Wagler board o/f detect assy	85434
49	1	Cup turret bracket	66621
50	1	Earth washer large	67068



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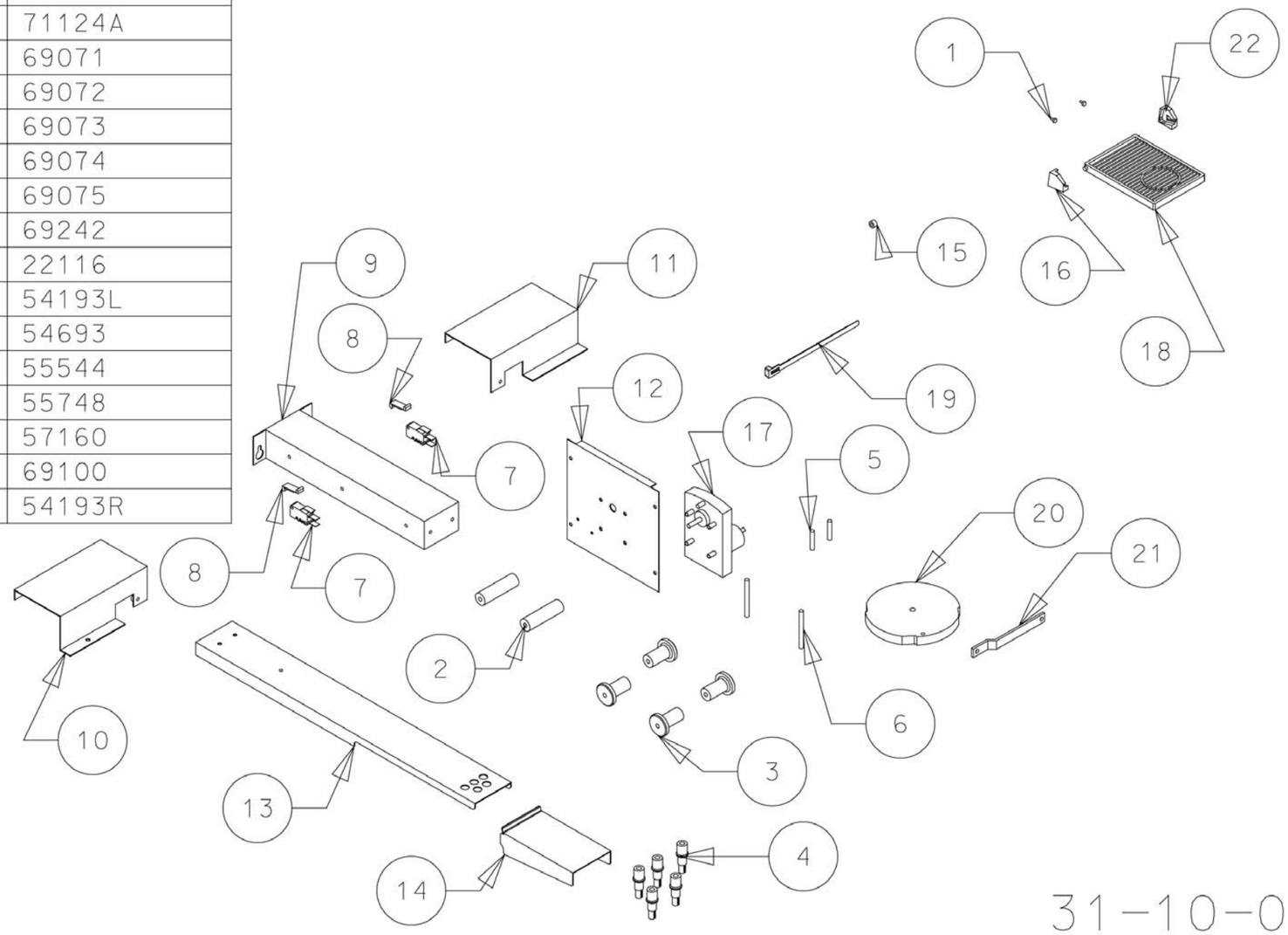
STUDIO TABLE TOP SINGLE FRESH BREW TEA
TEA 89131 SHEET 3 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	1	Snap black verona	10134
2	2	Dispence head roller	55723
3	4	Dispense cover roller	55724
4	5	Spout	56920
5	2	Dispense cam pin	69099
6	2	Roller guide pin	69241
7	2	Micro switch	71124
8	2	Actuator arm long brewer	71124A
9	1	Dispense body	69071
10	1	L/h dispense plate	69072
11	1	R/h dispense plate	69073
12	1	Dispense motor bracket	69074
13	1	Dispense arm	69075
14	1	Dispense shroud	69242
15	1	Spacer 5.2x10x7.5	22116
16	1	Cup stand bracket lh	54193L
17	1	Motor dispence head 19 rpm	54693
18	1	Cup stand	55544
19	1	Cable tie re-usable	55748
20	1	Dispense cam	57160
21	1	Dispense cam link	69100
22	1	Cup stand bracket RHS	54193R



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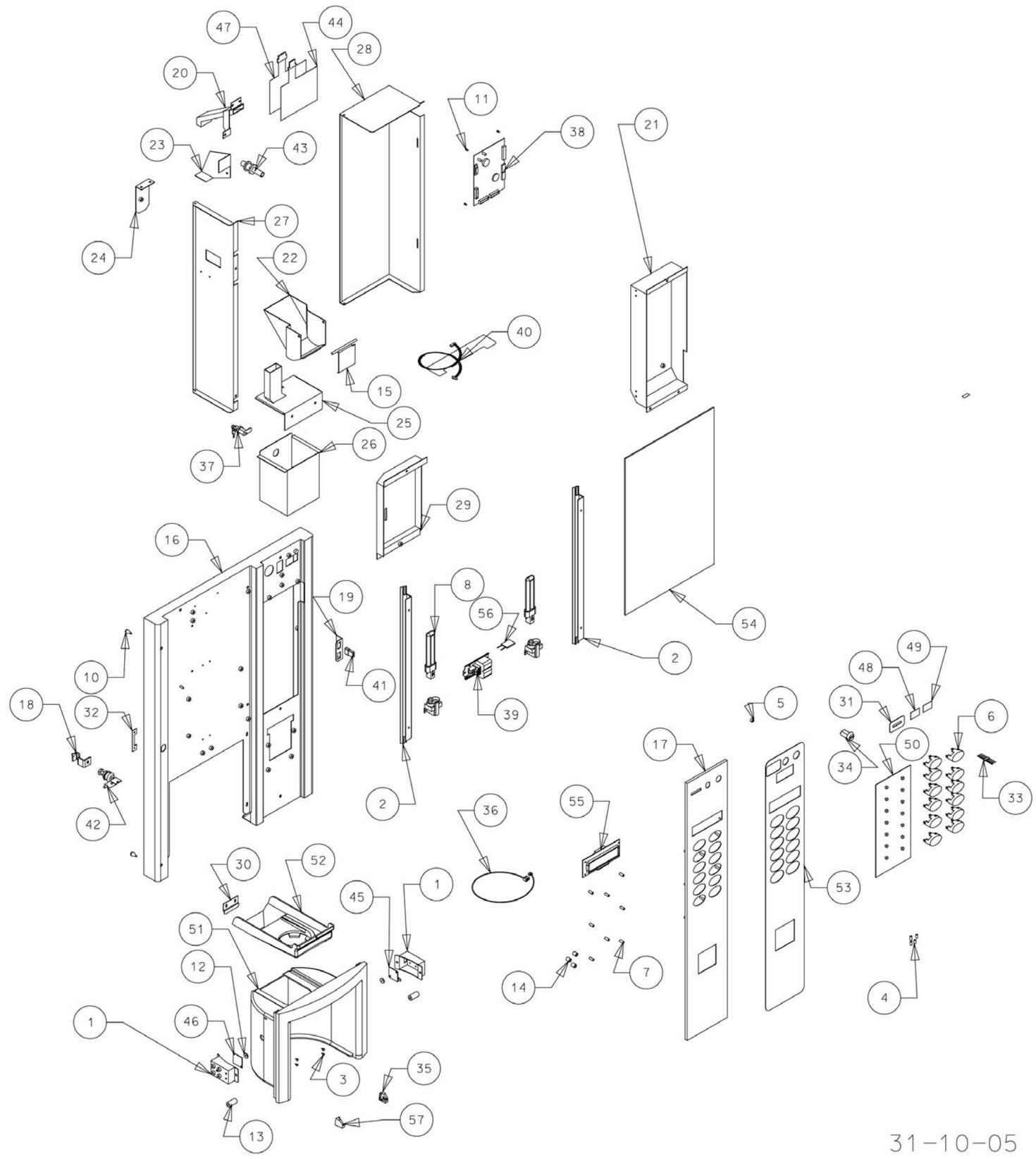
STUDIO TABLE TOP SINGLE FRESH BREW TEA
TEA 89131 SHEET 4 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Eye sensor bracket	66680
2	2	Picture guide	69090
3	4	Snap black verona	10134
4	4	Spacer nylon m3X9.5	22098
5	1	Spacer 5.2x10x7.5	22116
6	12	Button cap	54041A
7	8	Keyboard spacer verona	54047
8	2	Dulux lamp-s 7w	55052
9	2	Lampholder	55054
10	2	Door buffer rubber verona	56053
11	4	Board support long deep	56271
12	2	Eye sensor lens small	59065
13	2	Plastic spacers -0485068	59134
14	3	Spacer nylon 10.0mm high	22015
15	1	Coin flap	66631
16	1	Door	68928
17	1	Infil panel	68929
18	1	Lock cam	68930
19	1	Molex bracket	68692
20	1	Coin chute	69061
21	1	Coin mech box	69062
22	1	Coin hopper	69063
23	1	Reject plate	69064
24	1	Reject pivot	69065
25	1	Cash box guide	69066
26	1	Cash box	69067
27	1	Door cover support	69068
28	1	Door cover	69069
29	1	Board cover	69084
30	1	Cup holder plate	69091
31	1	Bezel plate	69092
32	1	Lock plate	69094
33	1	Single way 8 way header	22101
34	1	Keyed switch 1 way	54175
35	1	Cup stand bracket RHS	54193R
36	1	Jug key earth link	54392
37	1	Lock cash box	54599
38	1	Controller mpu sl	54955
39	1	Choke	55053
40	1	Internal keypad loom	55136
41	1	2 way molex connector	55594
42	1	Lock and key	55847
43	1	Reject button	55947
44	1	Keypad circuit only	55960
45	1	Cup sensor receiver	56022
46	1	Cup sensor sender	56023
47	1	Keypad decal studio	56393
48	1	Coin decal studio silver	56433
49	1	Coin decal studio copper	56434
50	1	Studio 2 keyboard pcb	56837
51	1	Cup station	57067
52	1	Cup holder	57068
53	1	Infill overlay	57114
54	1	Picture panel	57116
55	1	Chip on glass LCD PCB	55264
56	1	Snubber assembly	86630
57	1	Cup stand bracket lh	54193L



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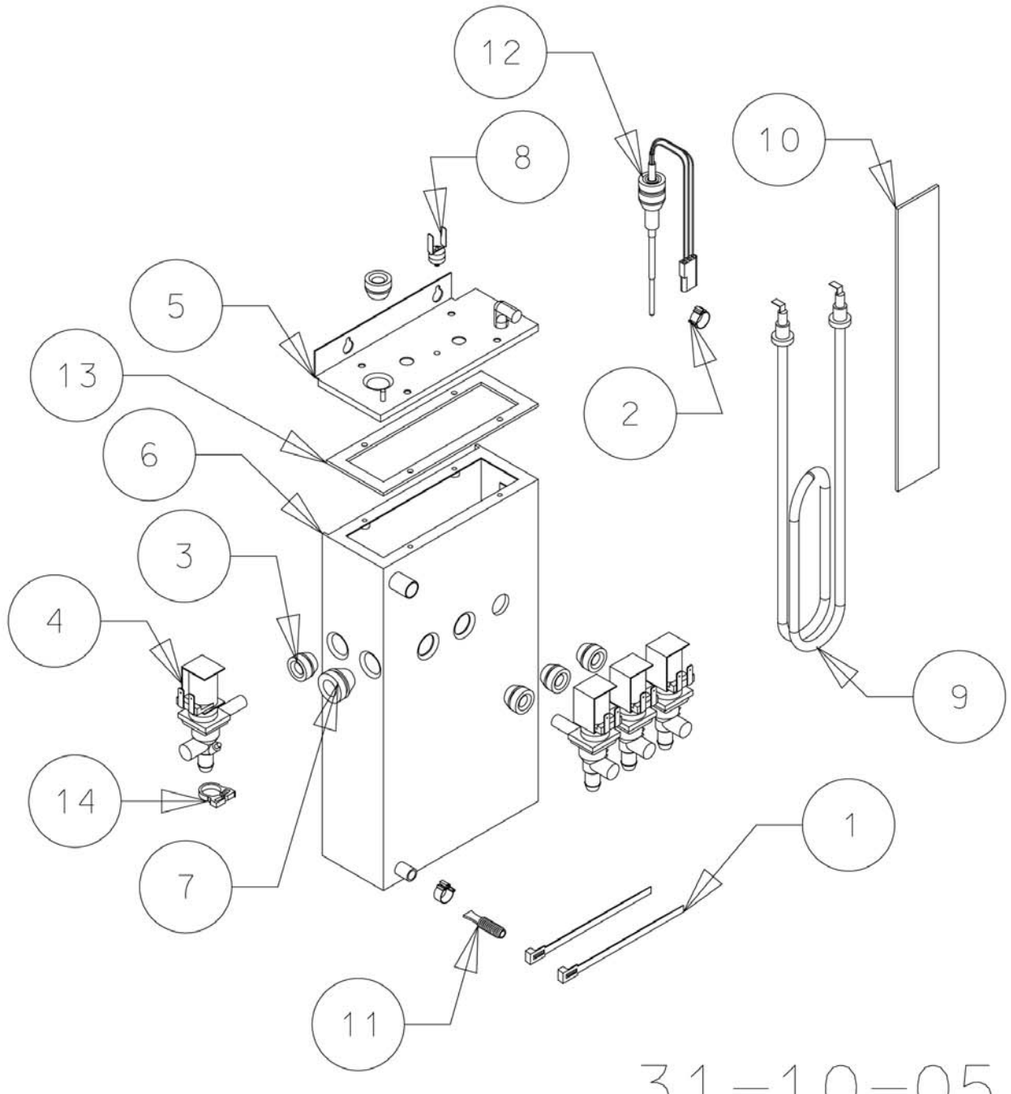
STUDIO TABLE TOP SINGLE FRESH BREW TEA
TEA 89131 SHEET 5 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Cable tie for boiler	22102
2	2	Cobra clip 14mm normal	54011
3	5	Swaged port valve seal	54543
4	4	Outlet valve 8mm 24vDC	55003
5	1	Boiler lid	68884
6	1	Boiler	68884B
7	1	Blind swaged port seal	54544
8	1	Thermal cutout 95 degrees	55250
9	1	Element 3KW 240V SID/TID	55430
10	1	Boiler foam pad	55551
11	1	Hose bung flangeless plug	55692
12	1	Boiler probe assembly	94543
13	1	Boiler seal	57161
14	1	Snapper clip no 12	71745



ITEMS NOT DISPLAYED

NO.	QTY.	DESCRIPTION	PART NUMBER
1	1m	1.0mm white wire	22216
2	.9m	Tube braided black 10x3.5	54113
3	.5m	Silicone tube 6mm id 3mm wall	54161
4	5m	Grey tube 6x10	54641
5	.85m	Tube 11x18mm	55438
6	1	Hot drink menu decal	56368
7	1	Studio operators guide	56574
8	1	Studio test spec sheet	56588
9	1	Main loom studio tt	57071
10	1	Studio tt arm loom	57133
11	1	Daily check list	57341
12	1m	Silicone tube 8x12mm	59070

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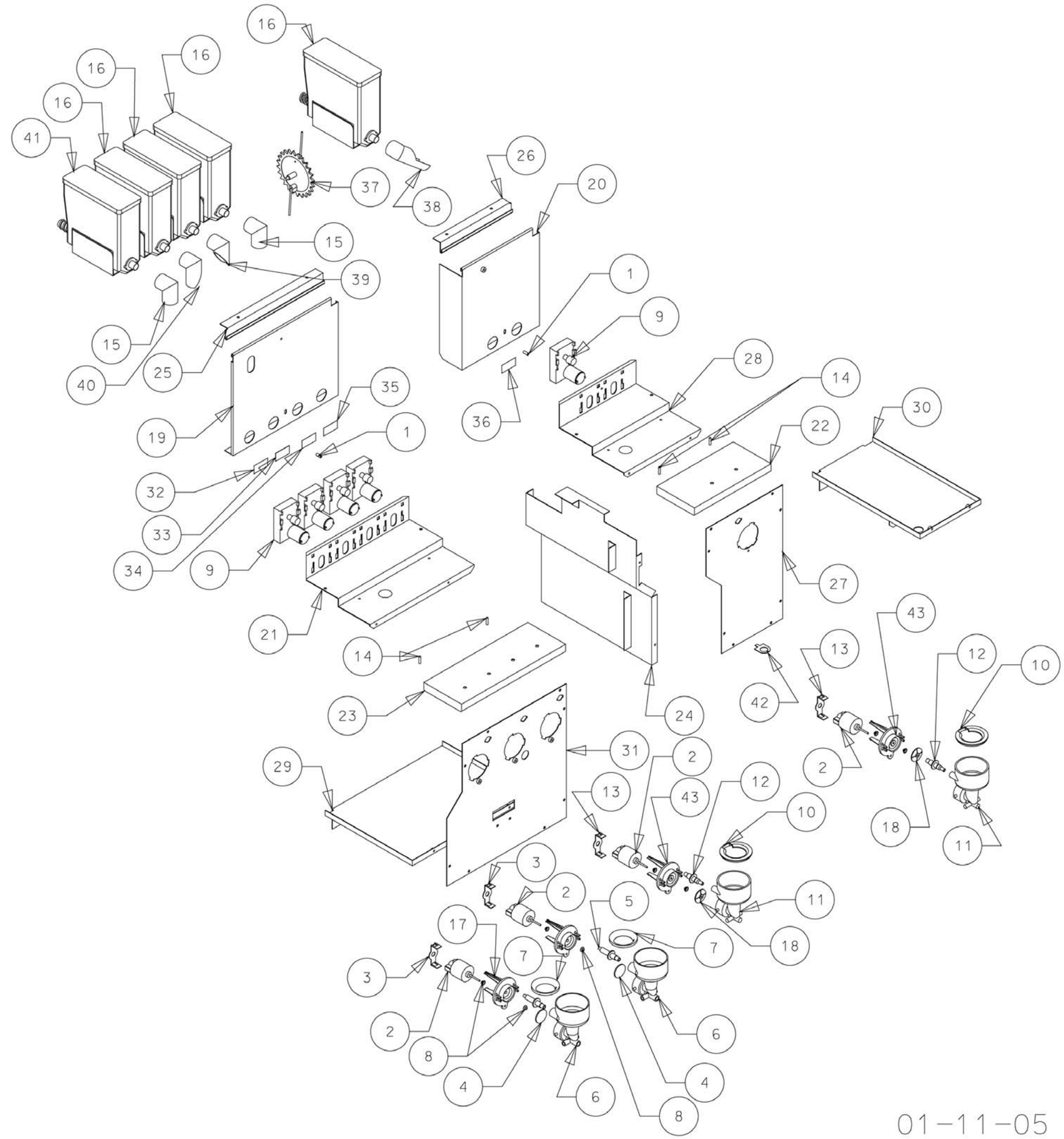
STUDIO TABLE TOP MACHINE INSTANT
89142 PAGE 1 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Boiler cover spacer verona	54626
2	4	Whipper motor	54645
3	2	Motor retainer grey	54649
4	2	Impelor disk grey	54652
5	2	Mix bowl inlet pipe grey	54656
6	2	Whipper chamber grey	54658
7	2	Steam trap grey	54662
8	8	Whipper seal	54767
9	5	Ing motor 120rpm	54930
10	2	Steam trap beige	55214
11	2	Whipper chamber beige	55215
12	2	Mix bowl inlet pipe beige	55241
13	2	Motor retainer beige	55243
14	4	4mm pin bullet	55639
15	2	Ingredient chute central	56028
16	4	Canister 64mm wire auger	59204
17	2	Whipper base grey	84665
18	2	Impellor disk beige	55242
19	1	L/h boiler cover	69029
20	1	R/h boiler cover	69050
21	1	L/h motor shelf	69079
22	1	R/h extract duct	69080
23	1	L/h extract duct	69081
24	1	Centre panel	69082
25	1	L/h boiler cover bracket	69088
26	1	R/h boiler cover bracket	69089
27	1	R/h whipper panel	69132
28	1	R/h motor shelf SFB tea	69133
29	1	L/h base plate	69135
30	1	R/h base plate	69136
31	1	Whipper plate instant	69143
32	1	Canister label chocolate	28209
33	1	Canister label milk	28212
34	1	Canister label sugar	28214
35	1	Canister label tea	28211
36	1	Canister label coffee	28210
37	1	Agitator small wire auger	55187
38	1	Long chute l/h	55819
39	1	R/h chute	56032
40	1	L/h chute	56037
41	1	Canister 64 Plastic auger	59059
42	1	Earth washer large	67068
43	2	Beige whipper base	85247



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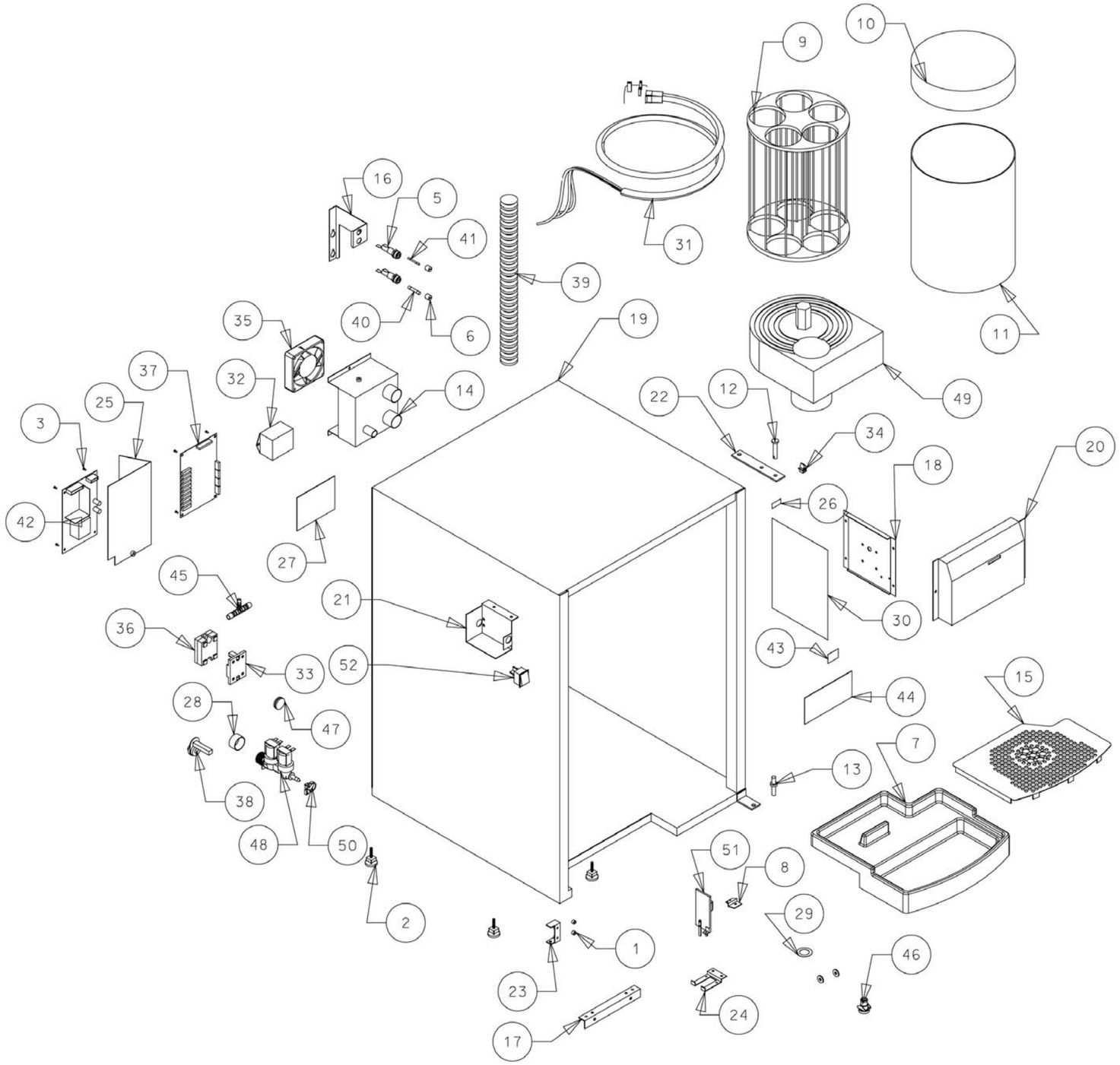
STUDIO TABLE TOP MACHINE INSTANT
89142 PAGE 2 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Spacer 5.2x10x7.5	22116
2	4	Small feet black m8 x 25	55223
3	8	Board support long deep	56271
5	2	16 amp fuseholder bussman	71101
6	2	Cap for fuse holder 71101	71101C
7	1	Drip tray	57069
8	1	Tray sensor bracket	69244
9	1	Cup turret	57183
10	1	Cup turret lid	57183_L
11	1	Cup turret celluloid sleave	57183_S
12	1	Top hinge pin	66616
13	1	Bottom hinge pin	66617
14	1	L.C.V. fanbox	67757
15	1	Drip tray grille	68883
16	1	Fuse panel	69000
17	1	Roller bracket	69070
18	1	Dispense motor bracket	69074
19	1	Cabinet	69083
20	1	Board cover	69084
21	1	Switch box	69086
22	1	Top hinge plate	69095
23	1	Roller guide	69239
24	1	Waggler bracket	69243
25	1	Psu cover	69405
26	1	Danger label warning disc	10064
27	1	Danger live terminal label	10070
28	1	Dust cover for inlet valve	20014
29	1	Tea brewer silicone seal	22095
30	1	Rating plate	28114
31	1	UK mains lead with 13A plug	54416
32	1	Filter unit	54486
33	1	S S R Terminal cover	54552
34	1	Tie wrap holder snap lock	55217
35	1	Extract fan sounon	55239
36	1	SS relay 240v	55466
37	1	DC rio board	55676
38	1	Mains lead device	55767
39	1	Hose 1 1/4 extra flex	55770
40	1	Fuse 5a 415 (f) 32mm cer	55881
41	1	15A fuse	56114
42	1	Psu dc 100W	56374
43	1	Warning label	56399
44	1	Caution label hands clear	56626
45	1	T piece	56851
46	1	Bowl adaptor	59041
47	1	Grommet diaphram type	59139
48	2	Spacer plastic m4X13X	59145
48	1	Inlet valve 24v DC double	59235
49	1	Cup unit 24V DC uk 73mm	59332
50	1	Snapper clip no 12	71745
51	1	Wagler board o/f detect assy	85434
52	1	Switch rocker on/off verona	55458



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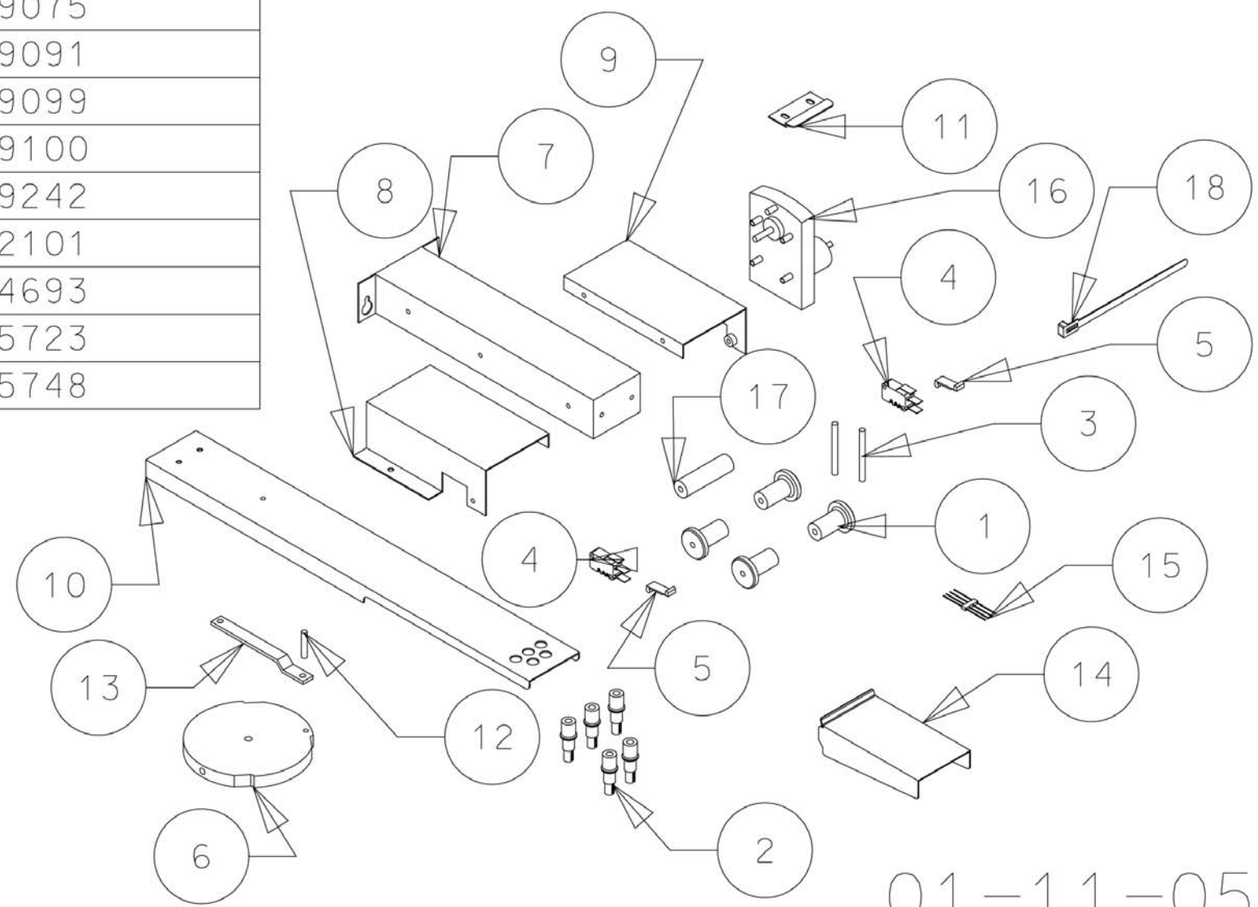
STUDIO TABLE TOP MACHINE INSTANT
89142 PAGE 3 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	4	Dispense cover roller	55724
2	5	Spout	56920
3	2	Roller guide pin	69241
4	2	Micro switch	71124
5	2	Actuator arm long brewer	71124A
6	1	Dispense cam	57160
7	1	Dispense body	69071
8	1	L/h dispense plate	69072
9	1	R/h dispense plate	69073
10	1	Dispense arm	69075
11	1	Cup holder plate	69091
12	1	Dispense cam pin	69099
13	1	Dispense cam link	69100
14	1	Dispense shroud	69242
15	1	Single way 8 way header	22101
16	1	Motor dispence head 19 rpm	54693
17	1	Dispence head roller	55723
18	1	Cable tie re-usable	55748



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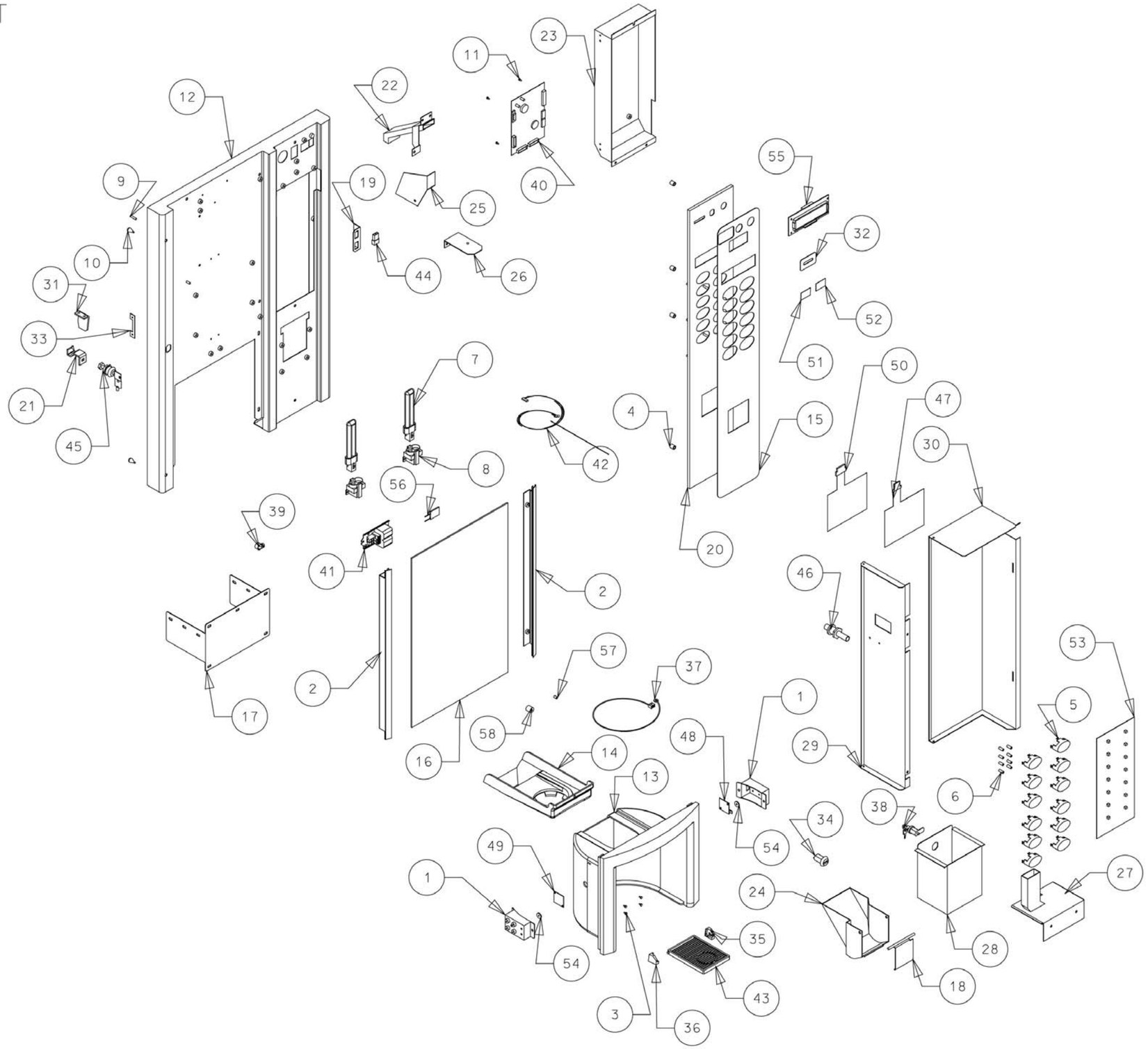
STUDIO TABLE TOP MACHINE INSTANT
89142 PAGE 4 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Eye sensor bracket	66680
2	2	Picture guide	69090
3	4	Snap black verona	10134
4	4	Spacer nylon 10.0mm high	22015
5	12	Button cap	54041A
6	8	Keyboard spacer verona	54047
7	2	Dulux lamp-s 7w	55052
8	2	Lampholder	55054
9	1	4mm pin bullet	55639
10	2	Door buffer rubber verona	56053
11	4	Board support long deep	56271
12	1	Door	68928
13	1	Cup station	57067
14	1	Cup holder	57068
15	1	Infill overlay	57114
16	1	Picture panel	57116
17	1	Cup turret bracket	66621
18	1	Coin flap	66631
19	1	Molex bracket	68692
20	1	Infil panel	68929
21	1	Lock cam	68930
22	1	Coin chute	69061
23	1	Coin mech box	69062
24	1	Coin hopper	69063
25	1	Reject plate	69064
26	1	Reject pivot	69065
27	1	Cash box guide	69066
28	1	Cash box	69067
29	1	Door cover support	69068
30	1	Door cover	69069
31	1	Door striker	69085
32	1	Bezel plate	69092
33	1	Lock plate	69094
34	1	Keyed switch 1 way	54175
35	1	Cup stand bracket RHS	54193R
36	1	Cup stand bracket lh	54193L
37	1	Jug key earth link	54392
38	1	Lock cash box	54599
39	1	P clip NX5	54789
40	1	Controller mpu sl	54955
41	1	Choke	55053
42	1	Internal keypad loom	55136
43	1	Cup stand	55544-
44	1	2 way molex connector	55594
45	1	Lock and key	55847
46	1	Reject button	55947
47	1	Keypad circuit only	55960
48	1	Cup sensor receiver	56022
49	1	Cup sensor sender	56023
50	1	Keypad decal studio	56393
51	1	Coin decal studio silver	56433
52	1	Coin decal studio copper	56434
53	1	Studio 2 keyboard pcb	56837
54	1	Eye sensor lens small	59065
55	1	Chip on glass LCD PCB	55264
56	1	Snubber assembly	86630
57	1	Spacer nylon 7.5 high	22068
58	1	Plastic spacers	59054



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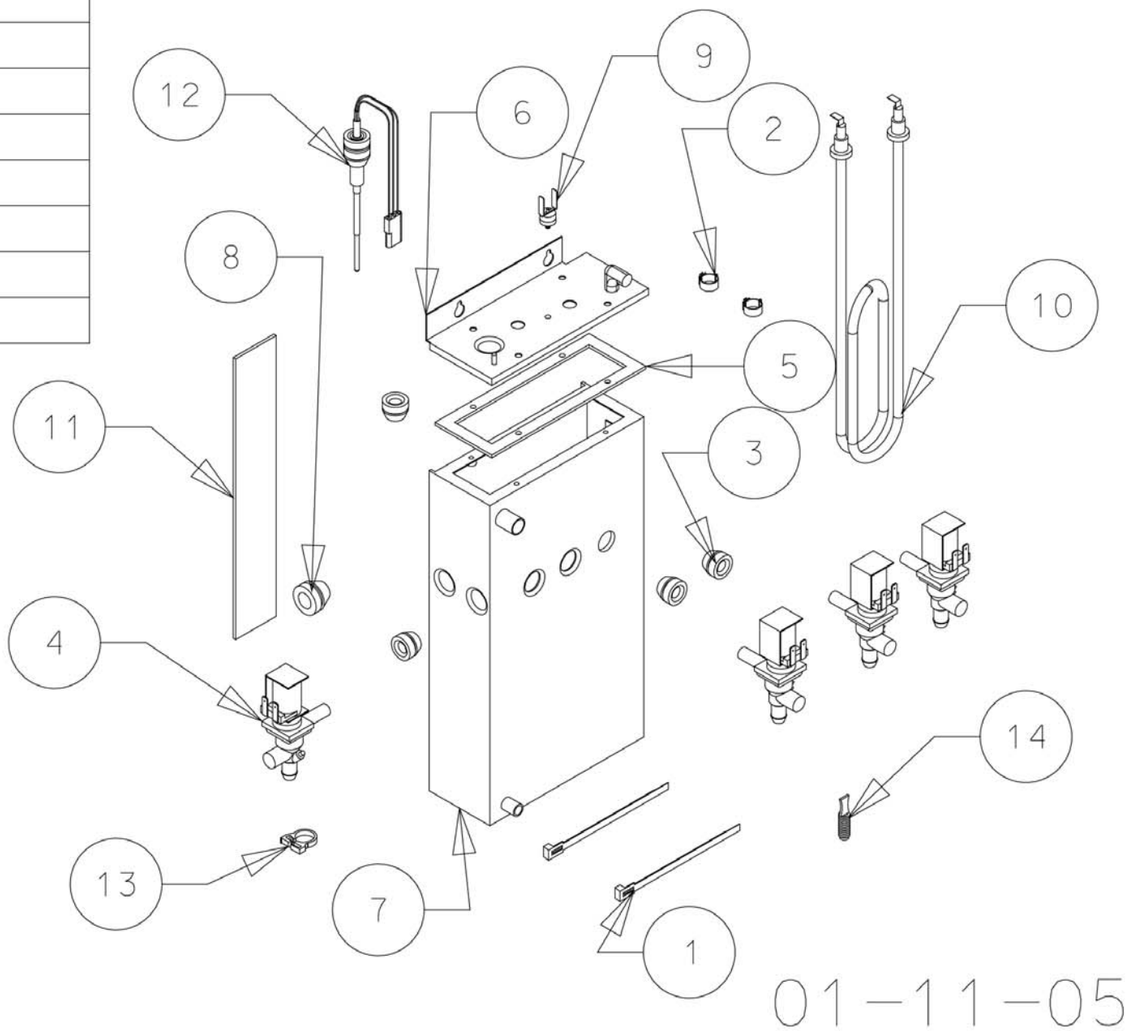
STUDIO TABLE TOP MACHINE INSTANT
89142 PAGE 5 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Cable tie for boiler	22102
2	2	Cobra clip 14mm normal	54011
3	5	Swaged port valve seal	54543
4	4	Outlet valve 8mm 24vDC	55003
5	1	Boiler seal	57161
6	1	Boiler lid	68884
7	1	Boiler	68884B
8	1	Blind swaged port seal	54544
9	1	Thermal cutout 95 degrees	55250
10	1	Element 3KW 240V SID/TID	55430
11	1	Boiler foam pad	55551
12	1	Boiler probe assembly	94543
13	1	Snapper clip no6	71730
14	1	Hose bung flangeless plug	55692



ITEMS NOT DISPLAYED

NO.	QTY.	DESCRIPTION	PART NUMBER
1	1m	1.0mm white wire	22216
2	.9m	Tube braided black 10x3mm wall	54113
3	5m	Grey tube plat cured	54641
4	.85m	Silicone tube 11x18mm	55438
5	1	Hot drink menu decal set	56368
6	1	Studio operators guide	56574
7	1	Studio test spec sheet	56588
8	1	Main loom studio tt	57071
9	1	Studio tt arm loom	57133
10	1m	Silicone tube 8x12mm	59070
11	1	Daily check list	57341

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STUDIO TABLE TOP DOUBLE FRESH BREW
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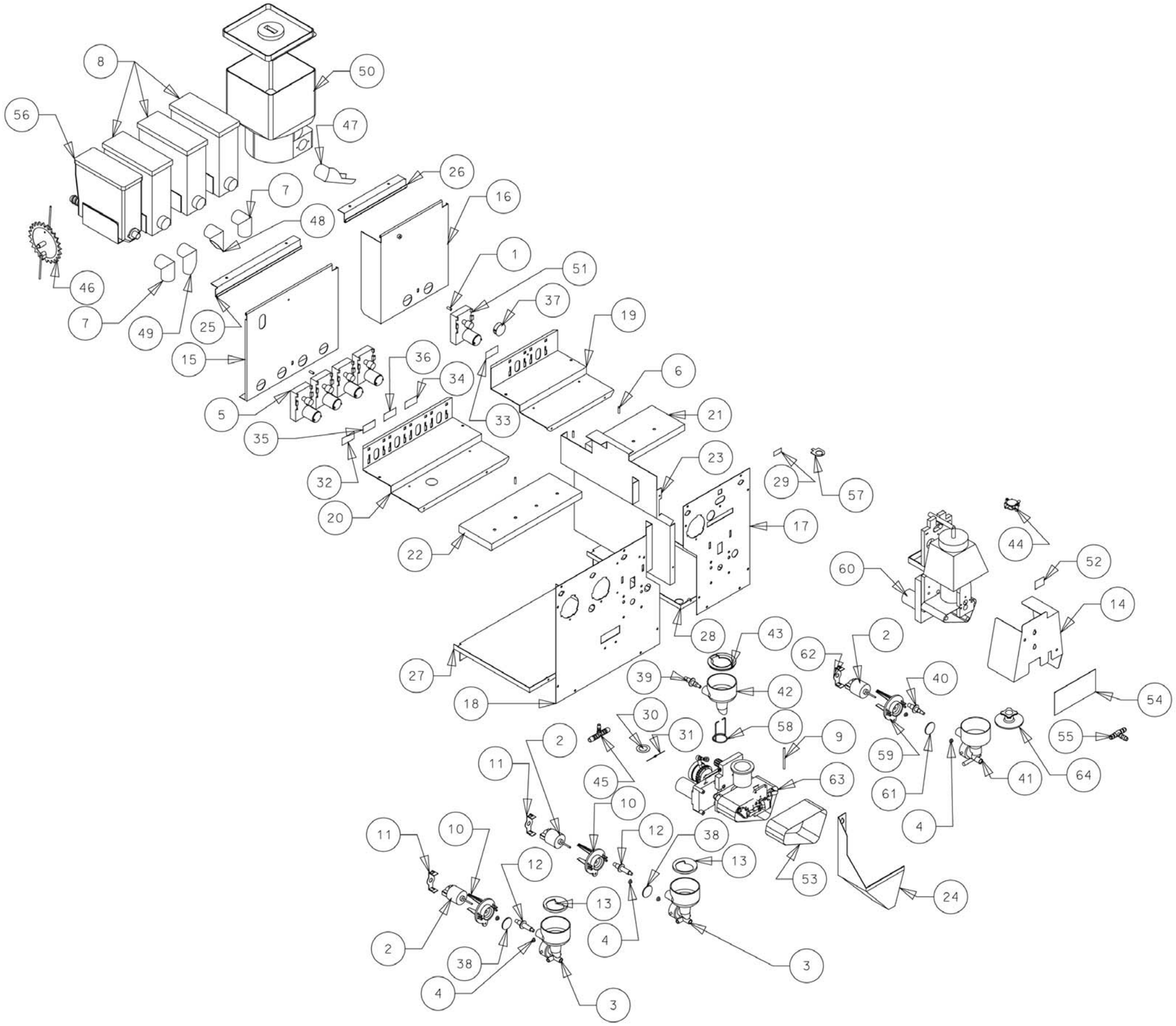
NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Boiler cover spacer verona	54626
2	3	Whipper motor	54645
3	2	Whipper chamber grey	54658
4	6	Whipper seal	54767
5	4	Ing motor 120rpm	54930
6	4	4mm pin bullet	55639
7	2	Ingredient chute central	56028
8	3	Canister 64mm wire auger no agitat	59204B
9	2	Lcv tea bar	67964
10	2	Whipper base grey	84665
11	2	Motor retainer grey	54649
12	2	Mix bowl inlet pipe grey	54656
13	2	Steam trap grey	54662
14	1	Coffee guard LCV	67949
15	1	L/h boiler cover	69029
16	1	R/h boiler cover	69050
17	1	Coffee panel	69076
18	1	Whipper panel	69077
19	1	R/h motor shelf	69078
20	1	L/h motor shelf	69079
21	1	R/h extract duct	69080
22	1	L/h extract duct	69081
23	1	Centre panel	69082
24	1	Tea chute	69087
25	1	L/h boiler cover bracket	69088
26	1	R/h boiler cover bracket	69089
27	1	L/h base plate	69135
28	1	R/h base plate	69136
29	1	Danger label warning disc	10064
30	1	Tea brewer silicone seal	22095
31	1	Capacitor ceramic 1uf F/V	22447
32	1	Canister label chocolate	28209
33	1	Canister label coffee	28210
34	1	Canister label tea	28211
35	1	Canister label milk	28212
36	1	Canister label sugar	28214
37	1	Blanking gromet	54211
38	2	Impelor disk grey	54652
39	1	Mix bowl inlet pipe black	54654
40	1	Mix bowl inlet pipe brown	54655
41	1	Whipper chamber brown	54657
42	1	Whipper chamber black cut off	84659
43	1	Steam trap black	54660
44	1	Diff pressure switch	54700
45	1	T piece	56851
46	1	Agitator small wire auger	55187
47	1	Long chute l/h	55819
48	1	R/h chute	56032
49	1	L/h chute	56037
50	1	Coffee canister	56140
51	1	Ing motor 140rpm	56397
52	1	Warning label	56399
53	1	Tea filter belt	56435
54	1	Caution label hands clear	56626
55	1	"T" piece coffee brewer	54910
56	1	Canister 64 Plastic auger	59059-
57	1	Earth washer large	67068
58	1	Tea pot coil	68157
59	1	Whipper base brown	84664
60	1	Coffee brewer red lever	89020
61	1	Impelor disk brown	54751
62	1	Motor retainer brown	54749
63	1	12 oz rh tea brewer	88100
64	1	Coffee chamber lid brown	57269



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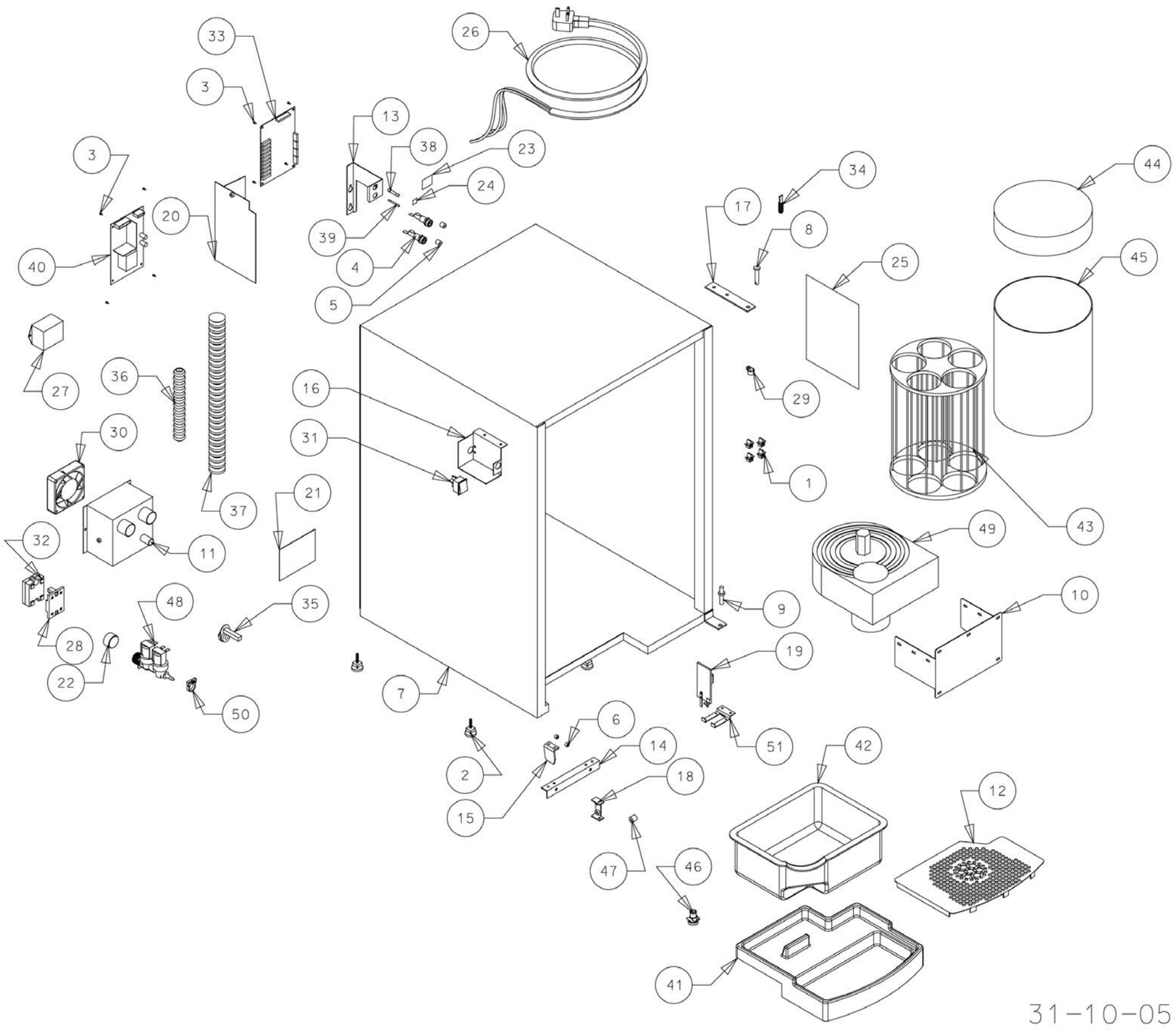
STUDIO TABLE TOP DOUBLE FRESH BREW
88972 PAGE 2 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	4	Tie wrap holder snap lock	55217
2	4	Small feet black m8 x 25	55223
3	8	Board support long deep	56271
4	2	16 amp fuseholder bussman	71101
5	2	Cap for fuse holder 71101	71101C
6	2	Spacer 5.2x10x7.5	22116
7	1	Cabinet	69083
8	1	Top hinge pin	66616
9	1	Bottom hinge pin	66617
10	1	Cup turret bracket	66621
11	1	L.C.V. fanbox	67757
12	1	Drip tray grille	68883
13	1	Fuse panel	69000
14	1	Roller bracket	69070
15	1	Door striker	69085
16	1	Switch box	69086
17	1	Top hinge plate	69095
18	1	Roller guide	69239
19	1	Wagler board o/f detect assy	85434
20	1	Psu cover	69405
21	1	Danger live terminal label	10070
22	1	Dust cover for inlet valve	20014
23	1	Fuse label F5A	22000
24	1	F15 sticker	22022
25	1	Rating plate	28114
26	1	UK mains lead with 13A plug	54416
27	1	Filter unit	54486
28	1	S S R Terminal cover	54552
29	1	P clip NX5	54789
30	1	Extract fan sounon	55239
31	1	Switch rocker on/off verona	55458
32	1	SS relay 240v	55466
33	1	DC rio board	55676
34	1	Hose bung flangeless plug	55692
35	1	Mains lead device	55767
36	1	Black hose 16mm i/d	55768
37	1	Hose 1 1/4 extra flex	55770
38	1	Fuse 5a 415 (f) 32mm cer	55881
39	1	15A fuse	56114
40	1	Psu dc 100W	56374
41	1	Drip tray	57069
42	1	Waste bucket	57070
43	1	Cup turret	57183
44	1	Cup turret lid	57183_L
45	1	Cup turret celluloid sleave	57183_S
46	1	Bowl adaptor	59041
47	1	Plastic spacers	59054
48	1	Inlet valve 24v DC double	59235
49	1	Cup unit 24V DC uk 73mm	59332
50	1	Snapper clip no6	71730
51	1	Waggler bracket	69243



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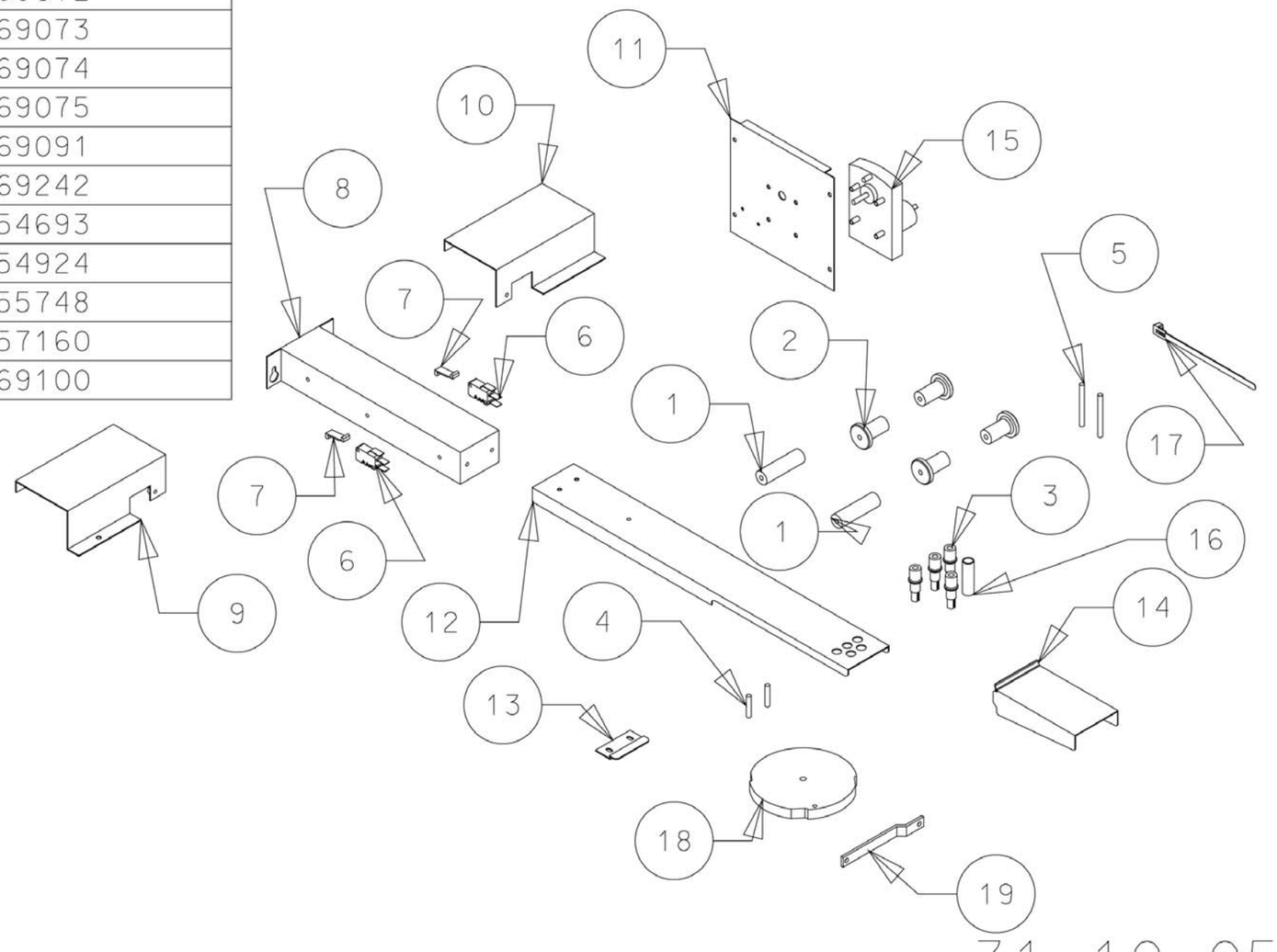
STUDIO TABLE TOP DOUBLE FRESH BREW
88927 PAGE 3 OF 5

NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Dispence head roller	55723
2	4	Dispense cover roller	55724
3	4	Spout	56920
4	2	Dispense cam pin	69099
5	2	Roller guide pin	69241
6	2	Micro switch	71124
7	2	Actuator arm long brewer	71124A
8	1	Dispense body	69071
9	1	L/h dispense plate	69072
10	1	R/h dispense plate	69073
11	1	Dispense motor bracket	69074
12	1	Dispense arm	69075
13	1	Cup holder plate	69091
14	1	Dispense shroud	69242
15	1	Motor dispence head 19 rpm	54693
16	1	Brewer spout Nu/Ver/Pac	54924
17	1	Cable tie re-usable	55748
18	1	Dispense cam	57160
19	1	Dispense cam link	69100



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STUDIO TABLE TOP DOUBLE FRESH BREW
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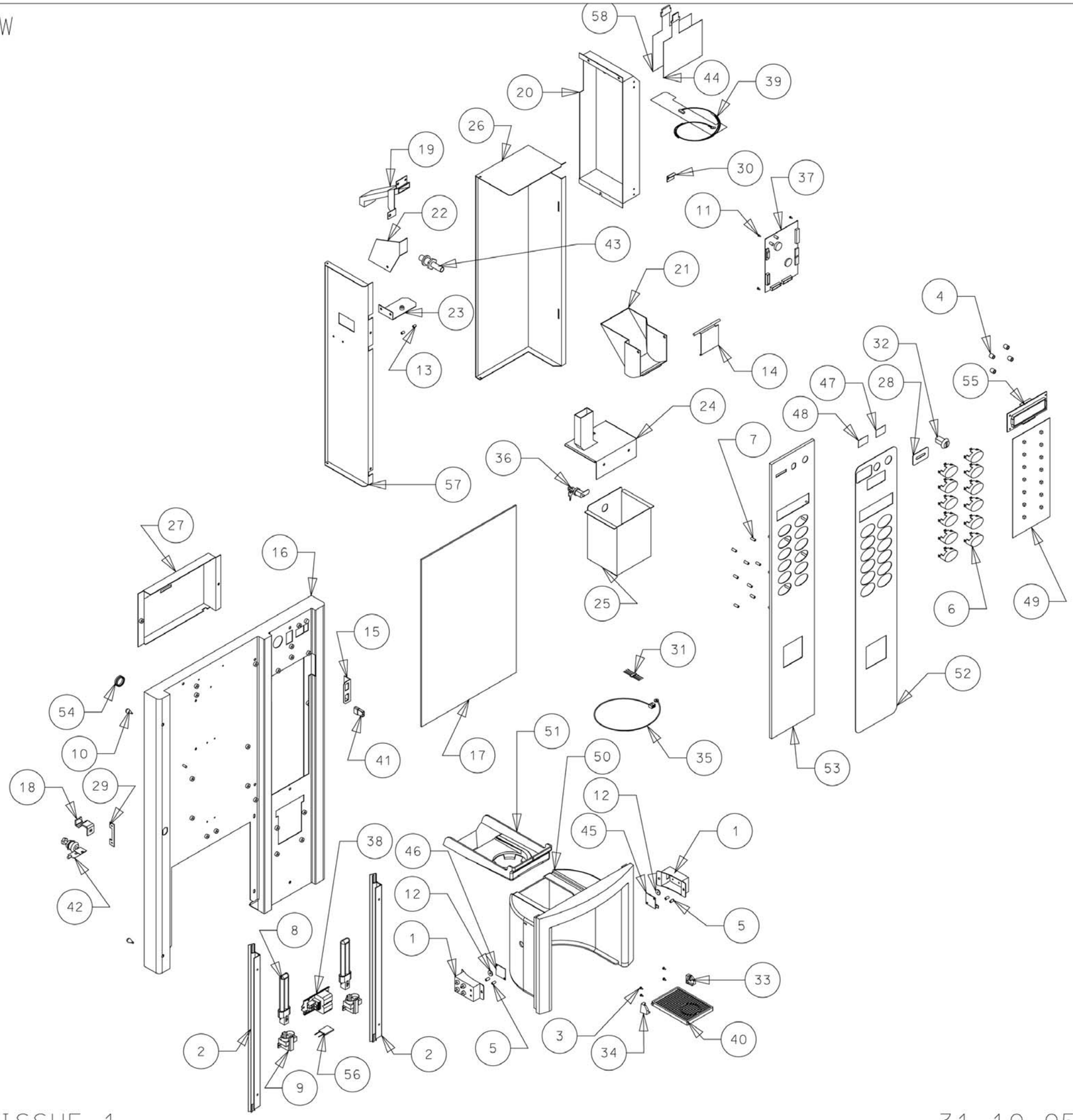
NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Eye sensor bracket	66680
2	2	Picture guide	69090
3	4	Snap black verona	10134
4	4	Spacer nylon 10.0mm high	22015
5	4	Spacer nylon m3X9.5	22098
6	12	Button cap	54041A
7	8	Keyboard spacer verona	54047
8	2	Dulux lamp-s 7w	55052
9	2	Lampholder	55054
10	2	Door buffer rubber verona	56053
11	4	Board support long deep	56271
12	2	Eye sensor lens small	59065
13	2	Spacer nylon 7.5 high	22068
14	1	Coin flap	66631
15	1	Molex bracket	68692
16	1	Door	68928
17	1	Picture panel	57116
18	1	Lock cam	68930
19	1	Coin chute	69061
20	1	Coin mech box	69062
21	1	Coin hopper	69063
22	1	Reject plate	69064
23	1	Reject pivot	69065
24	1	Cash box guide	69066
25	1	Cash box	69067
26	1	Door cover	69069
27	1	Board cover	69084
28	1	Bezel plate	69092
29	1	Lock plate	69094
30	1	Door cover clip	69439
31	1	Single way 8 way header	22101
32	1	Keyed switch 1 way	54175
33	1	Cup stand bracket lh	54193L
34	1	Cup stand bracket RHS	54193R
35	1	Jug key earth link	54392
36	1	Lock cash box	54599
37	1	Controller mpu sl	54955
38	1	Choke	55053
39	1	Internal keypad loom	55136
40	1	Cup stand	55544-
41	1	2 way molex connector	55594
42	1	Lock and key	55847
43	1	Reject button	55947
44	1	Keypad circuit only	55960
45	1	Cup sensor receiver	56022
46	1	Cup sensor sender	56023
47	1	Coin decal studio silver	56433
48	1	Coin decal studio copper	56434
49	1	Studio 2 keyboard pcb	56837
50	1	Cup station	57067
51	1	Cup holder	57068
52	1	Infill overlay	57114
53	1	Infil panel	68929
54	1	Grommet diaphram type	59139
55	1	Chip on glass LCD PCB	55264
56	1	Snubber assembly	86630
57	1	Door cover support	69068
58	1	Keypad decal studio	56393



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STUDIO TABLE TOP DOUBLE FRESH BREW
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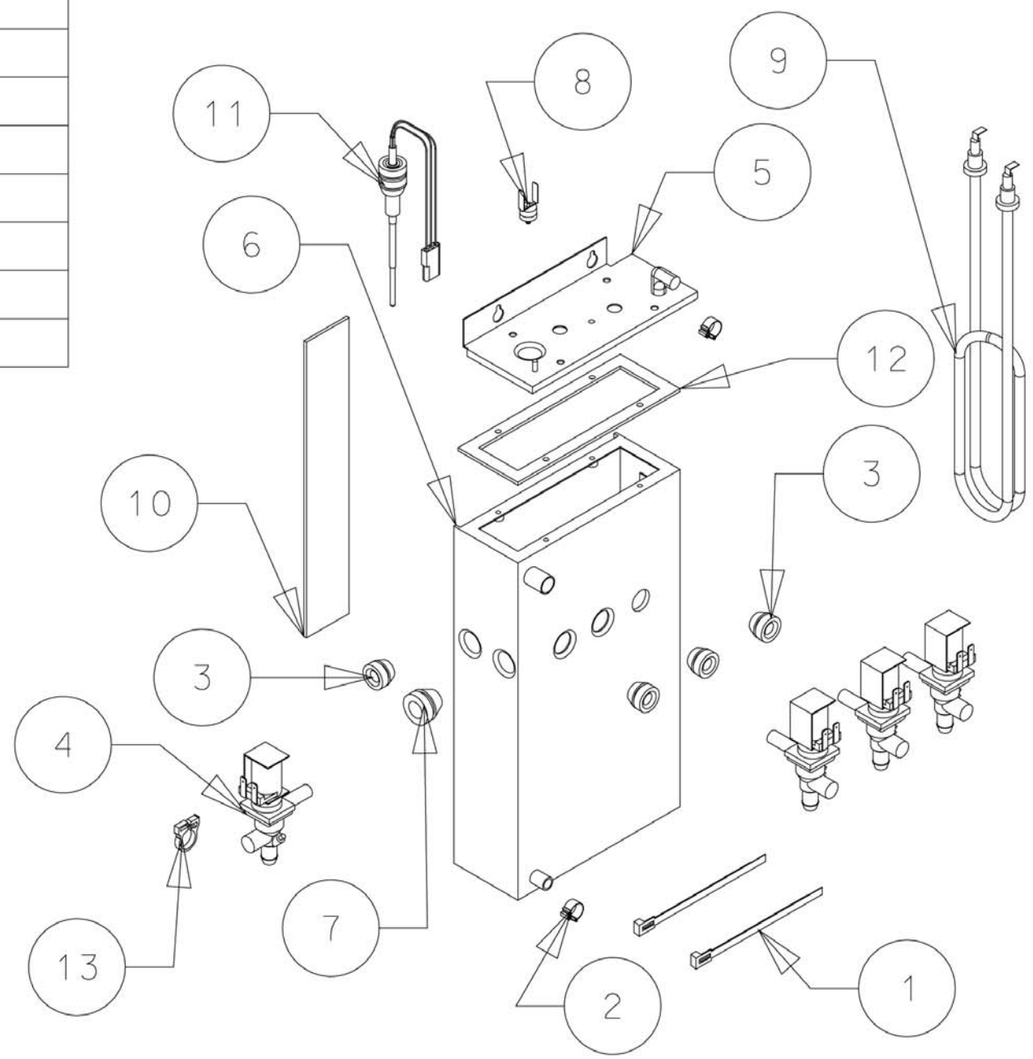
NO.	QTY.	DESCRIPTION	PART NUMBER
1	2	Cable tie for boiler	22102
2	2	Cobra clip 14mm normal	54011
3	4	Swaged port valve seal	54543
4	4	Outlet valve 8mm 24vDC	55003
5	1	Boiler lid	68884
6	1	Boiler	68884B
7	1	Blind swaged port seal	54544
8	1	Thermal cutout 95 degrees	55250
9	1	Element 3KW 240V SID/TID	55430
10	1	Boiler foam pad	55551
11	1	Boiler probe assembly	94543
12	1	Boiler seal	57161
13	1	Snapper clip no 12	71745



ITEMS NOT DISPLAYED

NO.	QTY.	DESCRIPTION	PART NUMBER
1	1m	1.0mm white wire	22216
2	.9m	Tube braided 10x3.5	54113
3	.05m	Silicone tube 6mm idx3mm wall	54161
4	1	Paperless brewer loom	54501
5	1	O ring 54x2	54535
6	.4m	Silicone tube 3.2x1.6wall	54570
7	1	Loom brewer	55128
8	.85m	Tube 11x18mm	55438
9	1	Studio operators guide	56574
10	1	Studio test spec. sheet	56588
11	1	Main loom studio tt	57071
12	1	Studio tt arm loom	57133

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